

# Special Report

## Digitalization and Intelligentization Enabling Transformation

The global energy industry is accelerating its transition to an era of digitalization and intelligentization. The new generation of technological revolution is reshaping the way we produce and live, and the traditional ways of acquiring energy need to be changed. To catch up with the new trend of accelerating energy transition, CNPC promotes the use of digital technology to empower the industry, so as to deliver cleaner and low-carbon energy to consumers while reducing costs and enhancing performance.

**Promoting the collaboration between business development and R&D innovation.** We coordinate the optimization of the oil and gas industry chain and the R&D innovation, and have upgraded informatization from application integration to shared services. Through overall planning for all oil and gas production sectors and in an effort to maximize the overall profitability of the upstream as well as downstream business chain and shareholder value, we optimize resource allocation, processing, logistics and marketing to achieve a comprehensive perception of market

dynamics, coordinated optimization of production and operation, a rapid response to risk warnings, and accurate and efficient decision-making. In terms of collaborative research and development, the research platform is integrated with shared professional software and other elements to improve the efficiency of multi-disciplinary and cross-organization collaborative research and development, and artificial intelligence digital tools are used to support new product development and make research more successful. A centralized and unified business management and office management platform and a production management platform covering the upstream, midstream and downstream of the oil and gas industry chain have been established. These platforms have improved management efficiency and promoted information sharing and business collaboration across disciplines and departments.

**Facilitating industrial transformation and upgrading.** We integrate the Internet, big data, and artificial intelligence with the Company's business to realize smart oil and gas fields, smart refining, smart marketing and smart engineering, so as to facilitate industrial transformation and upgrading. In 2020, we launched a new version of E&D Dream Cloud platform, enabling the core data of the Company's upstream business to be fully shared.



### Smart engineering

#### Goals

- To build a lifecycle intelligent support platform for drilling engineering, and fully improve risk management and control, engineering quality, and operation efficiency.
- To build intelligent wellbores for real-time and transparent remote surface/downhole monitoring of the whole process of drilling and completion.
- To create intelligent operation sites, including intelligent drilling and digital seismic teams.

#### Application

Supported by CNPC's intelligent support system for engineering operations, the digital transformation and intelligent development of engineering technology business began to pay off. As of the end of 2020, the data covered 1,124 wells, more than 4,300 field problems were solved remotely, and the complex troubleshooting efficiency was improved by 47.93%.



### Smart oil and gas fields

To form a new oilfield business model of "real-time monitoring, smart diagnosis, automatic processing and smart optimization" based on perception, interconnection and data fusion.

Xinjiang Oilfield built an information system covering business such as the Internet of Things for oil and gas production and a collaborative research environment to provide production dynamics in real time, support oilfield production and operation activities, vigorously promote intelligent analysis and application and support scientific decision-making.



### Smart refining

To enhance the ability of perception, analysis and optimization, prediction and coordination of refineries, and build a new smart refining model featuring an efficient supply chain, lean operation, safe work control and interconnected operation and maintenance.

Changqing Petrochemical built an information system covering the management, production execution and operation control levels, and achieved automatic operation, lean management and collaborative operation in the areas of production, equipment, safety and environmental protection.



### Smart marketing

To promote the transformation and upgrading of refined oil retailing business, build an ecosystem of "people, vehicle and life", and achieve "smart marketing, digital operations and integrated management and control" relying on digital technologies such as the Internet of Things, big data, and artificial intelligence and upholding the new retail concept.

Shanghai Marketing Company explored the construction of a digital ecosystem by facilitating its retailing with technologies such as big data and artificial intelligence.

