Sadara – enabling world's largest petrochemical complex built in a single phase
Improving efficiency, cutting costs and mitigating risks
The challenge

In 2007, a major petrochemical company embarked on a key strategic project to develop and serve the Middle East market with chemical products never before produced in the region. The project aim is to enable the Kingdom of Saudi Arabia to become self-sufficient, reduce imports and boost exports within GCC (Gulf Cooperation Council) and wider Gulf region.

The facts

$20 Billion project with several integrated systems that will power, automate and manage the entire facility - 26 manufacturing plants

Producing 3 million metric tons of plastics and high value added chemicals every year

The project involves over 15 different EPCs, 19 key stakeholders, from 8 countries

1 ABB
The solution - includes state based control philosophy which supports unusual situation management and operational excellence

ABB is central to the success of Sadara

The complete automation and electrical system for Sadara is very complex and is central to the success of the whole facility. ABB being Main Automation Contractor (MAC) touches all levels of the project from concept through long lifecycle of the plant. With its unique combination of domain and digital expertise ABB facilitates much better economies of scale, while delivering cutting-edge optimization that helps keeps costs in line without sacrificing innovation. Also, at the heart of everything is ensuring zero accidents and injuries, despite the scale and size of the project.

Building by numbers

- 70 Operator consoles across
- 5 control rooms, operating
- 18 distributed control systems (DCS)

- 450 servers, 210 workstations,
- 260 redundant controllers
- installed in 890 system/I/O cabinets
- 320 marshalling cabinets

- 150,000 I/O ~ 30%
  - Foundation Fieldbus;
  - (130,000 hard + 20,000 soft)

- Orders received by ABB:
  - $600+ million worth of power and automation

- Service magnitude during execution phase: 275+ ABB people supporting (180 on site)
The benefits – ABB’s main automation contractor (MAC) approach

A single operator is able to take on a range of complex, interlinked tasks that are central to the operation of facility.

Scalable design allows the facility to meet future needs and integrate new technologies in a digital environment.

Improved economies of scale.

Access to ABB process expertise.

Improved operations: Digital technologies allow for change simulation and standard software for improved uptime and minimal plant disturbances (Load Evaluate Go).