



SNC • LAVALIN

HEALTHCARE VALUE PROPOSITION

VACCINE MANUFACTURING

GET STARTED



INTRODUCTION



DALE CLARKE

EXECUTIVE VICE-PRESIDENT

SNC-LAVALIN IS ONE OF THE FEW COMPANIES WITH EXTENSIVE EXPERIENCE AND EXPERTISE IN THE PHARMACEUTICAL AND BIOTECHNOLOGY INDUSTRIES THAT CAN DELIVER DOMESTIC MANUFACTURING CAPACITY OF VACCINES. WE ARE PROUD OF THE ROLE WE PLAY IN THIS GLOBAL CHALLENGE.

We have been supporting the delivery of life-saving products for over 30 years. Accompanying innovative start-ups from R&D through commercial manufacturing, and rapidly mobilizing to deliver production facilities, we have provided turn-key solutions to solve manufacturing challenges for clients throughout the vaccine manufacturing industry.

AS CONSULTANTS AND BUILDERS IN THIS REGULATED FIELD THROUGH OUR END-TO-END SERVICES, WE PROVIDE:

- › Design and build solutions to vaccine manufacturing challenges
- › Program management and delivery
- › Technical advisory services

Our aim is to contribute to the expansion of vaccine manufacturing capacity that is necessary to meet the global challenge of pandemics such as COVID-19.



CURRENT STATE

VACCINATION REMAINS A KEY PILLAR IN THE DEFENSE STRATEGIES THAT COUNTRIES ARE DEVELOPING TO PROTECT THE HEALTH OF THE POPULACE IN THE FACE OF THE CURRENT AND FUTURE PANDEMICS.

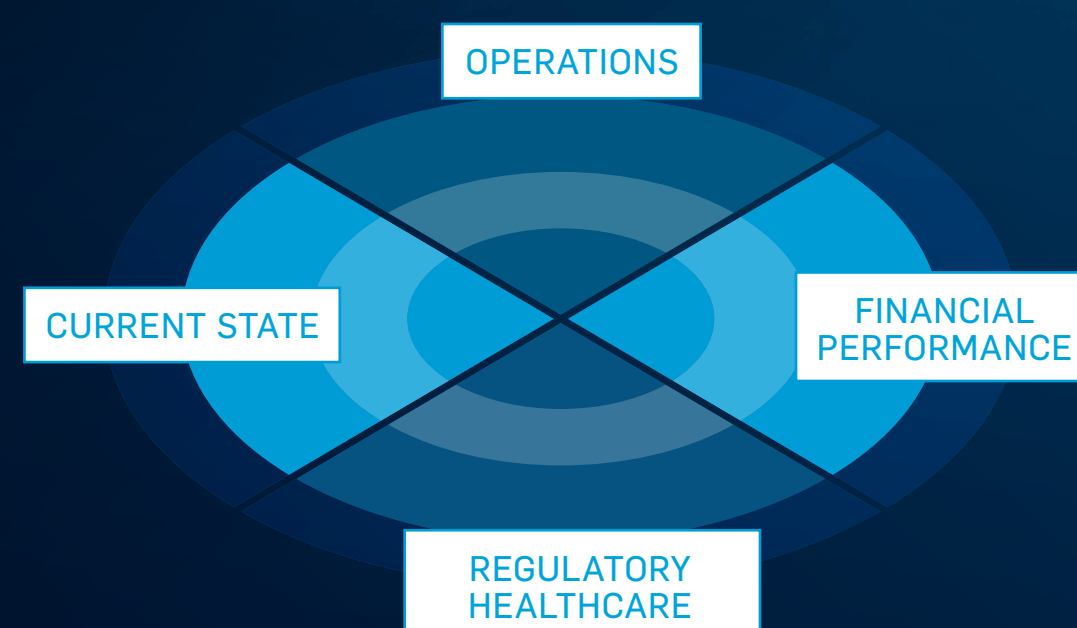
As our connected world learns to cope with COVID-19, the need for a vaccine solution remains evident. A key global strategy is to provide local vaccination to the population. Manufacturers are responding by creating or expanding research, manufacturing, and logistics capacity. The equitable distribution between vaccine producing and non-producing nations is a subject of global concern and attention, with non-government organizations working to coordinate global delivery. However, the global vaccine manufacturing capacity

is below the required demand levels and must increase significantly. SNC-Lavalin can deliver a manufacturing facility, once the decision is made to invest in facility infrastructure. Product innovation, speed to market, capital cost, and regulatory compliance are critical challenges facing vaccine manufacturers. Our team's deep technical expertise allows us to develop concrete, actionable solutions for the Design, Build, and Validation of these complex technical facilities.



HEALTH CHECK

SNC-LAVALIN, WITH ITS EXTENSIVE EXPERIENCE AND EXPERTISE IN PHARMACEUTICAL, BIOTECHNOLOGY AND MEDICAL DEVICE MANUFACTURING, CAN SUPPORT THE RESPONSE TO INCREASE DOMESTIC MANUFACTURING CAPACITY AND SUPPLY.



END-TO-END SOLUTIONS FOR MANUFACTURING CHALLENGE

SNC-Lavalin has the capacity, skill, and experience to provide end-to-end services and turn-key solutions for accelerated facility design-build, modification or expansion to manufacture vaccines.

We can provide process development and scale up, design, engineering, automation, procurement, construction, commissioning, validation and quality assurance services to deliver facilities. We have delivered bio-pharmaceutical facilities rapidly to meet the urgent needs of our clients and the wider population.

PROGRAM MANAGEMENT AND DELIVERY:

SNC-Lavalin employs a program management approach to drive and coordinate the delivery of these complex technical projects. By deploying proven processes and procedures, our approach delivers well structured projects, and regulatory-compliant facilities. This approach has been deployed successfully on our major pharmaceutical and biotechnology manufacturing, laboratories and logistics projects globally.

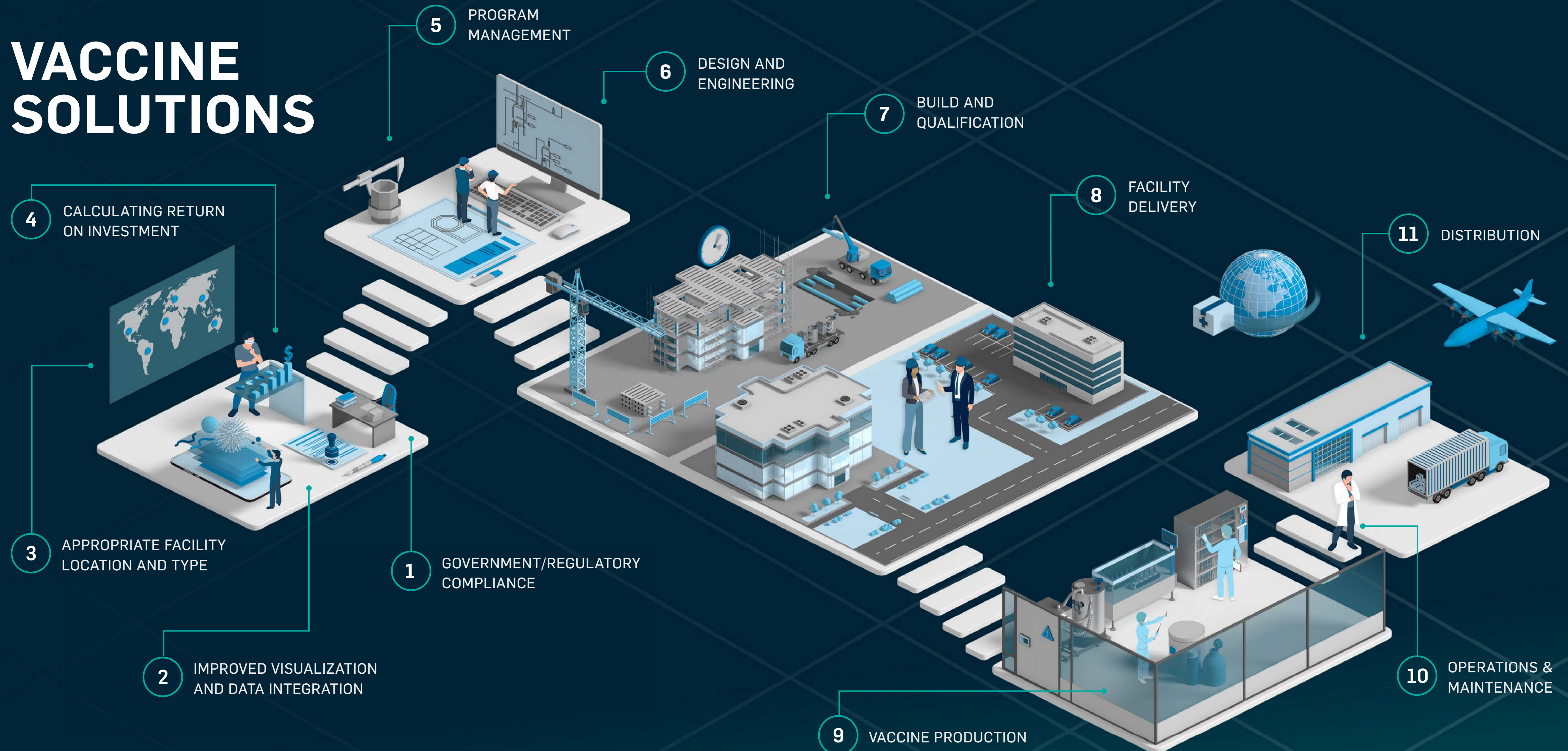
TECHNICAL ADVISORY:

SNC-Lavalin can advise on the complete vaccine manufacturing facility. Our best-in-class technical engineering and project delivery advisory services range from using process modeling for plant efficiency improvements to identifying innovative ways to build new facilities in compressed schedules at reduced capital costs. We advise on selecting the appropriate facility location and type, master planning to increase global reach and production, calculating return on investment, and government and regulatory compliance. Using state-of-the-art technologies, we can enhance the decision-making process, through digital reality capture technology, improved visualization, and data integration services.

Furthermore, our service offering brings us to collaborate with many industry bodies, including suppliers and health authorities to effectively plan and deploy an action plan for the project.



VACCINE SOLUTIONS





CASE STUDY 1

MEDICAGO

SUPPORTING MEDICAGO FROM R&D TO COMMERCIALIZATION

SNC-Lavalin provides support for all classes of vaccine manufacturing. We have been working with Medicago since it was a start-up in R&D. We have executed over 30 projects for them and are working to provide full design services for a 475,000ft² greenfield \$245M production facility in Quebec City, Canada.

\$250M

production facility in Quebec City on a 475,000ft² greenfield site.

This facility will expand Medicago's capacity to produce quadrivalent influenza vaccines, as well as vaccines in response to pandemics. Medicago's technology uses plants as hosts to cultivate functional molecules, leading to revolutionarily responsive production turn-around-times.

Our mandate includes engineering services, building design, manufacturing equipment procurement and plant automation technology. We also continue to work with Medicago on new manufacturing facilities and their COVID-19 response.



CASE STUDY 2

UNICEF

SUPPORTING UNICEF WITH CHILD VACCINES

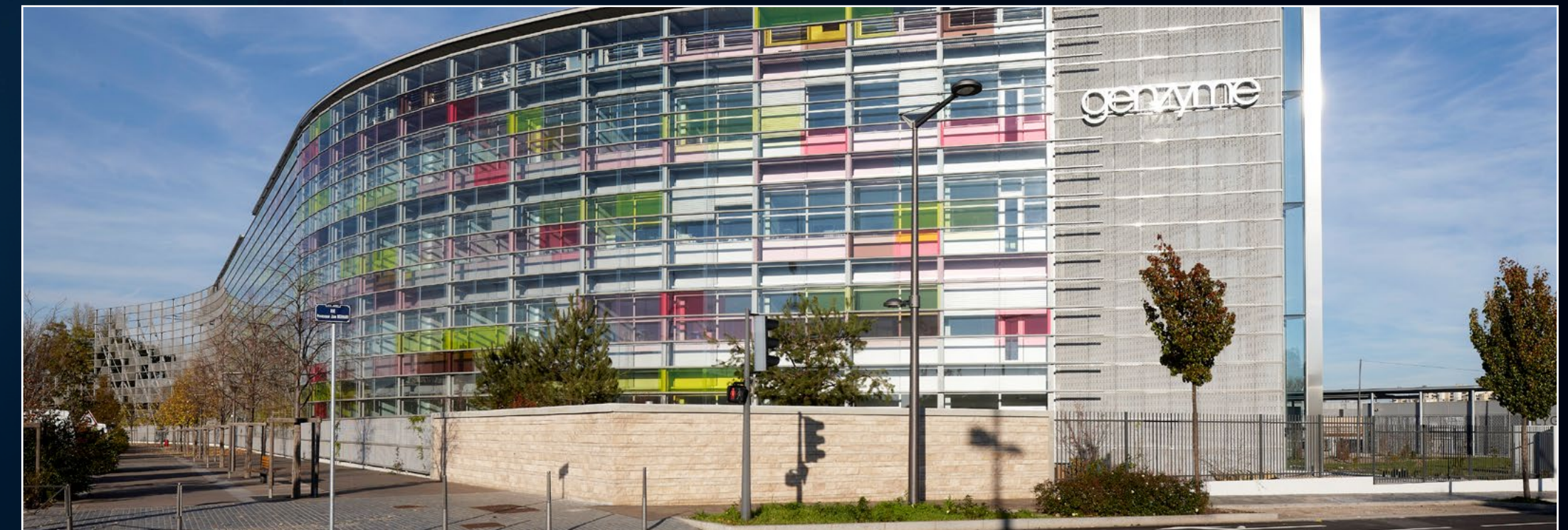
Janssen Pharmaceuticals of South Korea retained our experts to provide end-to-end turn-key services for construction of a \$90M greenfield vaccine production site. The facility produces pentavalent vaccines combating Hepatitis-B, diphtheria, tetanus, whooping cough, and influenza for UNICEF, supplying the world's foremost distributor

\$90M

greenfield vaccine production site which produces pentavalent vaccines combating numerous illnesses.

of child vaccines with around half of their required needs. Valuing our expertise, Janssen engaged us in a follow-up project to design and commission an additional filling line and complementary sterile formulation room.





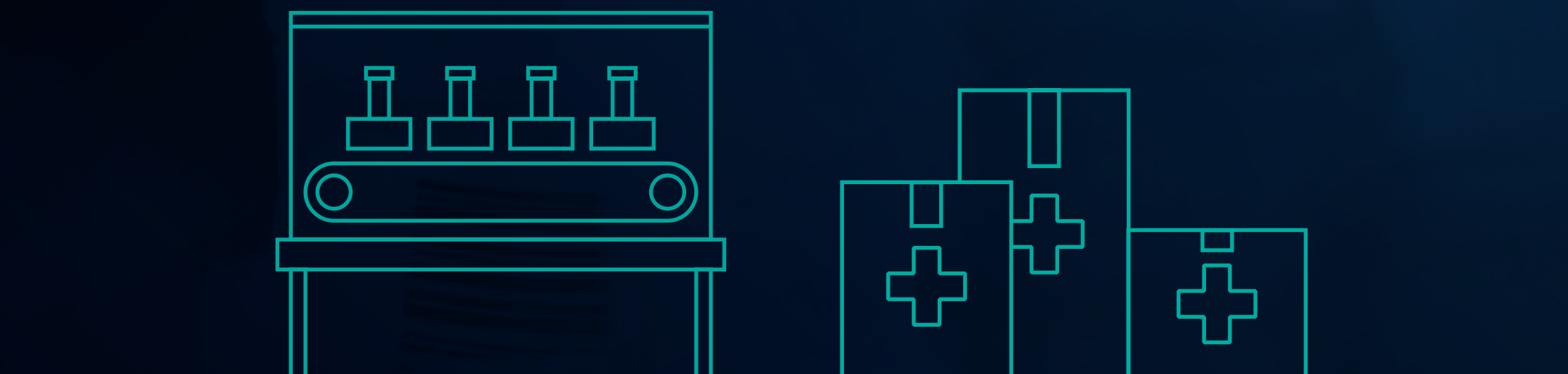
CASE STUDY 3

GLAXOSMITHKLINE

INCREASING PRODUCTION WITH GLAXOSMITHKLINE (GSK)

As a partner of GSK for over 15 years, we delivered their Quebec facilities in ultra-fast track mode (EPCMV) for increased production capability and pandemic influenza vaccine—an award-winning

project. Additionally, we designed upgrades to the Hamilton facility in Montana for adjuvant manufacturing and further provided engineering, automation, validation, project management, and regulatory services for numerous North American locations.



CASE STUDY 4

SANOFI

SUPPORTING SANOFI WITH GLOBAL MANUFACTURING FACILITIES

SNC-Lavalin has been partnering with Sanofi for almost 25 years, providing end-to-end services. We have provided comprehensive engineering services to support their biopharmaceutical facilities globally. Our team supported the development of a greenfield LEED Gold-certified

biopharmaceutical campus in Lyon, France. As Commissioning and Validation services were included within the scope, this project is a true representation of the breadth of our bio-pharmaceutical engineering expertise. We have also provided basis of design services for Sanofi, such as the Train-4 Project for the Fabrazyme Cell Culture Production Facility, in Framingham, Massachusetts.



SNC-LAVALIN LEGACY

WHO WE ARE

SNC-LAVALIN HAS BEEN DESIGNING AND BUILDING PHARMACEUTICAL, BIOTECH AND MEDICAL DEVICE RESEARCH AND PRODUCTION FACILITIES AROUND THE GLOBE FOR OVER 30 YEARS. OUR HIGHLY SKILLED TEAM DEDICATED TO THIS REGULATORY ENVIRONMENT OFFERS END-TO-END SERVICES FROM DESIGN TO CONSTRUCTION WITH VALIDATION AND QUALITY ASSURANCE. WE HAVE DELIVERED FAST-TRACK TURN-KEY PRODUCTION SITES FOR THE BIGGEST NAMES IN PHARMA, WHILE ACCOMPANYING INNOVATIVE START-UPS THROUGH THEIR JOURNEY TO COMMERCIAL MANUFACTURING.

OUR SERVICES

We are consultants who advise and assist in matters of pharmaceutical, biotechnology and medical device manufacturing, laboratories and logistics. We are builders, from the R&D stage to manufacturing to distribution, our delivery of a facility starts with design services and ends with handover to local health authorities.

Whether working with a start-up developing a novel vaccine technology or erecting a "brand name" vaccine facility in record time, we have always risen to the challenge, and we take pride in the fact that globally, we help rapidly bring life-saving products to those who need them. Our expertise and experience span many product-types, including:

- › Vaccines
- › Liquid & suspension
- › Diagnostic test kits
- › Oral solid dosage
- › Blood products
- › PPE
- › Injectables
- › Topicals
- › Medical equipment
- › Ointments
- › Controlled substances
- › API
- › Suppositories
- › Cell & gene therapy
- › Natural health products

AMERICAS
16,000 employees

EUROPE
12,000 employees

ASIA PACIFIC
4,500 employees

MIDDLE EAST & AFRICA
15,700 employees



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