

PHARMACEUTICAL & BIOTECHNOLOGY – A WSP CAPABILITY



At WSP we identify the significant challenges the pharmaceutical industry is facing in an environment that has become more complex and uncertain and where the society is characterised by rapid developments in science and technology as well as organisational changes. The pharmaceutical industry is finding difficulties in the act to sustain historical levels of growth principally because of two converging factors where firstly earnings are being increasingly squeezed between pricing constraints due to government policies and generic competition and secondly, through the rising costs of R & D as a result of increasing legislative requirements and growing technological sophistication.

WSP is offering a broad knowledge base and superior proficiency having had an extensive experience of working in various industries. With our ability to reverse engineering projects from a known capital figure WSP is in a qualified place to support pharmaceutical firms in containing cost due by capitalising. The expertise is primarily reflected in WSP CEL, a specialist process based division of WSP with considerable experience of delivering projects to the pharmaceutical industry.

In order to optimise their R & D activities major pharmaceutical firms are increasingly turning towards small start up companies to develop the early stages of compounds, resulting in neither of them entering JV's or acquiring these compounds to develop and market them. On the contrary, we at WSP have the proven ability to flex our approach and work effectively with small start ups on small scale assignments to significant key projects.

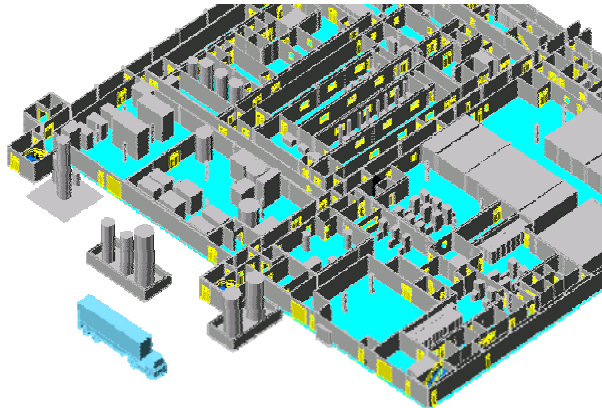
The market continues to see a shift towards Biotechnology and vaccine based products. WSP CEL has a strong track record in this area and we will continue to exploit our specialist know-how in process intensification, process modelling and flexible facilities.

A number of compounds that are being developed are highly toxic and therefore require high levels of containment during development and manufacturing. WSP's thorough skills and our proven depth of knowledge in high containment technology mean we have the capacity to support clients as they develop these compounds and the facilities required to manufacture them.

WSP contacts for Pharmaceutical and Biotechnology:

- **Steve Taylor**
stephen.taylor@wspcel.com
+44 24 7686 2375
- **Dave Moore**
dave.moore@wspcel.com.cn
+86 21 6226 3220
- **Eva Nilsson**
eva.nilsson@wspgroup.se
+46 734 406 420

PHARMACEUTICAL & BIOTECHNOLOGY – OUR REFERENCES



Vaccines – Novartis

This substantial bio-manufacturing facility produces influenza vaccine and comprises 2,500 m² of laboratories and clean rooms, encompassing Quality Assurance / Quality Control, virology, microbiology and seed preparation suites, together with associated services and infrastructure. WSP CEL responsibilities included concept design, front-end and detail design, project and construction management, commissioning and validation. The project involved conversion of a generic developer supplied building shell to a classified production and laboratory facility.

Consumer Healthcare Manufacturing - Reckitt Benckiser

WSP CEL initially undertook a study to plan Reckitt Benckiser's 10 year growth for their manufacturing facility in Hull, UK. Deliverables completed included an analysis of existing facilities, production lines, evaluation of GMP (Good Manufacturing Practice) and warehouses to ascertain areas of growth, constraints, expansion and improvement, provision of key timings for new product introductions, site and facility requirements. This work resulted in the preparation of three distinct alternative designs / layout solutions for extending the facility, including pharmaceutical production areas, offices, changing facilities, canteens, laboratories and warehouses. The above three solutions were developed into a proposed 10 year Site Master Plan. Subsequently WSP CEL was appointed to implement aspects of the study / master plan on an EPCM (Engineering, Procurement and Construction Management) basis.

Vaccines – Medimmune

MedImmune, Speke, which is an AstraZeneca company, required a site master plan study completed to review four options for capacity expansion and pandemic readiness for its existing vaccine manufacturing facility in the UK. A key requirement from the client was for WSP CEL to work closely with its site leadership team and corporate stakeholders and apply a methodical and well structured process for the gap analysis, options development and options appraisal to enable

the business to make a well informed decision. Subsequently WSP CEL has been awarded the detailed design of this project.

Pharmaceutical Facilities – Glaxosmithkline

WSP CEL has supported GSK on a number of projects in different geographies to include the UK, China, Romania, Poland and Ireland. In China this has encompassed a secondary pharmaceutical manufacturing and packaging facility in Suzhou and a new Research & Development laboratory facility in Tianjin where for both locations WSP CEL provided design / project management, construction / safety management services. Other activities undertaken for GSK include mechanical and electrical engineering / design for their corporate headquarters in Brentford, UK, site master planning for their Ware, UK site, and delivery on an EPCM basis of a soft gel dosage form manufacturing facility in Poznan, Poland.

Secondary Pharmaceutical – Boehringer Ingelheim

The range of facilities and different types of manufacturing facilities that WSP CEL has experience of is typically reflected by the projects delivered to Boehringer Ingelheim in Shanghai. This experience encompasses clean rooms (class 10,000 and 100,000), laboratories, GMP (Good Manufacturing Practice), dosage forms encompassing liquids, tablets, unit dose vials and measured dose inhalers, HVAC / clean utility systems and all associated manufacturing equipment.