



## Chemical Parks in Europe and China: Similarities, Differences, Learnings

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Chemical parks will become even more important as locations for chemical plants in China. How and why did chemical parks come into being in Europe and, later, in China? What can the Chinese chemical industry learn from the European experience? In addition to discussing these topics, we aim to outline potential ways of cooperation between chemical park operators in the two regions.

In the early days of the Chinese chemical industry, many chemical plants were built more or less randomly at individual locations throughout the country. However, with the rising importance of both safety and environmental issues in China, there has been a strong trend to move chemical production into dedicated chemical parks. This is one of the key points in the current Five-Year Plan for the chemical industry (for the period of 2016-2020), which sees relocation of chemical plants to chemical parks as one of the pillars of an upgrading of the industry as a whole. Specifically, three objectives need to be mentioned: no establishment of new chemical parks due to the large number of parks already existing, establishment of new chemical enterprises only within chemical parks, and finally accelerated relocation of existing chemical production into chemical parks. These three objectives clearly indicate the importance of a consolidated chemical park landscape in China.

The concept of chemical parks originated in Europe in the 1990s. Chemicals sites had grown to production networks with multiple plants over decades, mainly to

realize synergies of integrated production (“Verbund”). Infrastructure and services provided at those sites, such as utility networks and supply, safety/fire brigade, water treatment, maintenance, etc., were internal departments of the site-owning chemical producer. As the plants consuming these services belonged to the same entity as the provider, there was no need for a legal separation of the two parts.

This changed as European chemical companies started to focus their huge business portfolios on higher margin businesses by divesting commodity businesses and acquiring specialties. In that transformation, former single-user sites became multi-user sites as plants belonging to a specific business changed ownership. The resulting challenge was how to deal with infrastructure and service operations used by all chemicals companies on site. The answer was to transfer those activities to separate site operating companies which were either owned by the incumbent producer or by the major users on site.

Thus, a new business model, the dedicated site operating company, was established. There were three major reasons for that:

- Cost and risk related to infrastructure and service operations were shared between major users either through ownership or through service pricing
- By establishing more neutral and transparent service relationships, pressure was to be exerted on the site service organization to become more efficient
- The site operating company was to render the site more attractive for new tenants,

ideally by offering a “plug and play” environment to facilitate new plants without additional infrastructure investment

Looking back, we can say that the first objective was achieved just by organizational nature of the new business. To achieve the second objective of optimizing cost was sometimes a long and painful way, as initial efforts often proved futile due to recessions and plant closures which burdened tenants with idle cost. But after two decades, site operators are now much leaner and more responsive to customer requirements. The third objective, to attract new investments, was the most challenging one. The construction of new plants shifted to East Asia and, fueled by shale gas, to North America while the chemical industry in Europe saw considerable restructuring. This caused underutilization in some chemical parks. On the other hand, building new plants outside chemical parks becomes more difficult due to environmental and safety regulation. So, instead of enticing new tenants, chemical parks are now primarily vying for replacement or enlargement investments from incumbent players. Though the entrances of chemical parks frequently show many company name plates, these mostly stem from spin-offs from established companies or investors who bought such businesses, rather than from truly new activities. But there were also some successful settlements from overseas investors, e.g. the establishment of a plastics compounding plant by Chinese player Kingfa at the Wiesbaden Chemical park (Germany).

The risk of stagnating or even shrinking



chemical production volumes in European chemical parks may also explain why some large chemical companies still tend to hold their shares of site operating companies. Their reluctance to completely release chemical park operations to independent players might seem paradox, as they willingly become tenants at chemical parks in East Asia. But Asia, and China in particular, are growth markets, whereas plant closures and related idle cost are a challenge for many European chemicals parks. The incumbent players apparently prefer to manage those restructuring processes themselves instead of relying on third parties that might exploit their dependency on monopolistic infrastructure and services.

Compared to Europe, in China the situation is quite different. Most chemical parks in existence now have expressly been established with the goal of attracting multiple chemical companies. However, this has not led to an ideal situation either. Some of the issues currently encountered with regard to chemical parks include:

**Large number of parks:** There are currently 381 national key chemical industrial parks and probably at least the same number of local parks – in total, this is more than 10 times the number of parks in Germany. While this may at first not seem to be a problem, it means that many of them are still fairly empty and lack the critical mass to gain real economies of scale from shared services. As a consequence, the current government policy explicitly limits further growth of the number of chemical parks, and states that chemical industry parks which fail to meet the standards shall be rebuilt, improved or shall exit legally.

**Low management skills:** While a number of national-level parks have highly professional management, many smaller ones particularly in Western China are run mainly by government officials with limited experience regarding the needs and requirements of chemical companies.

**Limited level of planning:** As a consequence of the above, many of the smaller chemical parks are not optimized with regard to planning and integration of services. This relates to a multitude of issues including safety and environmental protection, sewage treatment, dangerous chemical waste treatment facilities, public accident emergency pool, dangerous chemical vehicle management facilities, emergency response and rescue command systems, etc.

However, these limitations of current Chinese chemical parks also highlight the benefits that may be gained from utilizing Western experience. This is particularly relevant as there is strong government support for establishing a common standard for chemical parks, and to create an independent service infrastructure for the chemical industry.

In this regard, China can benefit from the experience gained at European chemical parks. While no truly standardized operating model for chemical parks has emerged yet, the existing proven models show significant similarities and thus allow identification of some key factors that render chemical parks successful (see also Fig. 1):

- Separate operating companies with site operations as their core business
- They should focus their service offering (mostly on infrastructure and utility services as well as chemical park governance) and leave non-core services to be offered by third parties (e.g. maintenance, analytics)

- Overhead should be lean and cost should be transparent (scalable pricing through service level agreements)

- The relationship with tenants should aim at a win-win-constellation (through risk or profit sharing)

In our experience, site service companies are the most effective if they can roll out their blueprint across multiple sites and thus realize synergies with regard to cost and know-how. In Germany, some multi-site operators have already emerged which bring the value proposition of chemical parks to a new level.

This perspective should be even more appealing for China. Chemical parks may even become a new asset class that is attractive for industrial infrastructure investors. It is open whether and when that vision will become reality. But China can certainly overtake Europe in developing chemical park models and dedicated providers, as the general business environment makes it easier for operational companies to focus on their core competencies and leave chemical park operations to focused players. The “plug and play” ideal, only partly realized in Europe due to the constraints of existing sites, but with the successful showcases overseas ( e.g., Jurong Island, Singapore) may live up to its promise in China. Partnering with European chemicals parks or using their consulting services may further accelerate that development and avoid pitfalls in developing the chemical infrastructure. ■

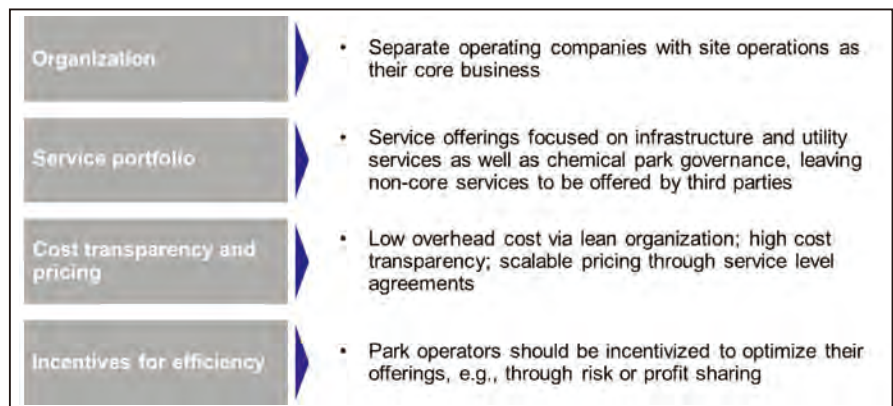


Fig. 1 Key success factors for operators of chemical parks