Technology scale-up risk assessment

Understanding and managing technology scale-up risk is essential for innovative companies, to enable them to gain the competitive advantage that economy of scale can bring.

As new technologies are developed and exploited, the benefits of ‘economy of scale’ are usually a key financial driver in the design of new production plants. But increasing the scale of process equipment can bring many unexpected risks - some engineering based and some rooted in applied science. So an important factor in business case assessment is the relationship between plant size and technical risk. It is therefore essential that those responsible for major projects involving the scale-up of technology have a good understanding of the technical risk profile.

**What we offer**

ABB have worked closely with many large international process sector operating companies and provided support in the development of innovative technologies. Because of that experience and insight, we are also able to act as an independent assessor of process technology innovation. We can carry out a range of audits and reviews on the effectiveness of process technology developments, including structured risk assessments.
Technology scale-up risk assessment

One particular technology assessment methodology we use looks at the risks associated with building large plants where the technology has been significantly scaled up from a previously proven baseline.

Many issues must be considered when assessing technology scale-up risk, including:

- Scale-up ratio from proven experience
- Inherent characteristics of the materials being processed
- Inherent characteristics of the processing operations, both chemical and physical
- Design tools and methodologies available
- Technical competence within the design process

Methodology

Our senior consultants lead a process which goes through structured steps, working with the technology development team, to:

- Divide the proposed technology into unit operations
- Identify the inherent scale-up difficulty of each unit operation, based on scoring of key process attributes
- Assess the robustness of the design method or model used in scale-up calculations
- Consider the potential impacts from technology failure of each unit operation and evaluate their business implications
- Prioritise further scrutiny of the unit operations according to the factors identified and focus attention on those which have a significant potential and probability for business impact
- Critically examine the higher priority areas, using independent subject experts to examine the data and constructively challenge the technology team.
- Provide an independent report which summarises findings, including:
  - Commentary on the processes and resources used by the technology team
  - Overview of scale-up risk profile for the proposed technology
  - Comments and recommendations on any specific relatively high risk areas, including possible mitigation approaches

Benefits

Our scale-up risk assessment can help technology development teams to understand better those areas of the process which present the most significant threat to operational performance, and how best to mitigate those risks. By providing an independent view, we can also assist those responsible for providing project funding to gain an overview of the technology risk profile - resulting in better investment decisions.

Why ABB?

ABB has a strong operational heritage, having been formed around the former ICI Technology Group. We have process engineering consultants with a wide range of experience in the development and assessment of innovative technologies in the process sector.