



Summary Process Intensification study

Kollo Silicon Carbide produces silicon carbide (SiC), a product with applications in, for instance, abrasive industries, technical ceramics, refractories (heat resistant materials) and metallurgical industries. Raw materials include sand and petroleum cokes. One of the characteristics of the manufacturing process is the high consumption of energy. The current production procedure is recognized as the most energy efficient method available world wide. Efficiency of raw material consumption is almost 100 % as a result of recycling materials.

The process intensification quick scan was carried out between October 2007 and March 2008. Given the energy consumption of the primary process, over 95% of total consumption, the quick scan was entirely focused on the SiC-production.

Results were divided in two categories:

1. Further optimization of the current production process by improvement of energy efficiency still appears to be possible. Possible improvements involve quality of raw materials, reactor geometry, and process parameters such as run time and power input. Also recommended is remodeling the existing coolant system.
2. A new production procedure, based on (semi-) continuous reactor technology, appears to be difficult to achieve, yet interesting enough for further investigation.

At this time, further improvement of the existing process, partially based on previously unknown possibilities, has the higher priority.