Process technology for the bitumen industry

- New ways for polymer modification of bitumen
- Bitumen emulsions in optimum quality

Production of bitumen emulsions

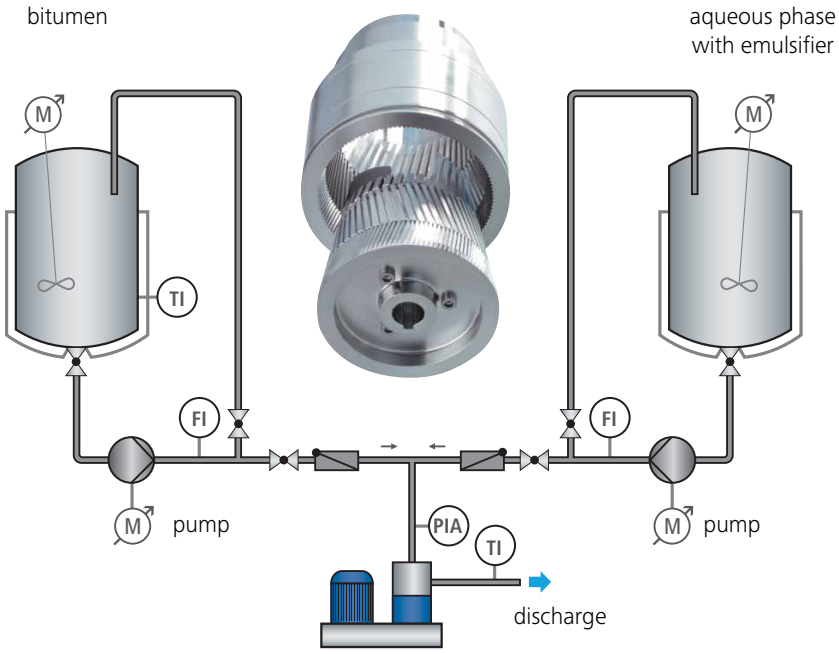
IKA® QUALITY

Improved emulsion stability is attained by a narrow particle distribution

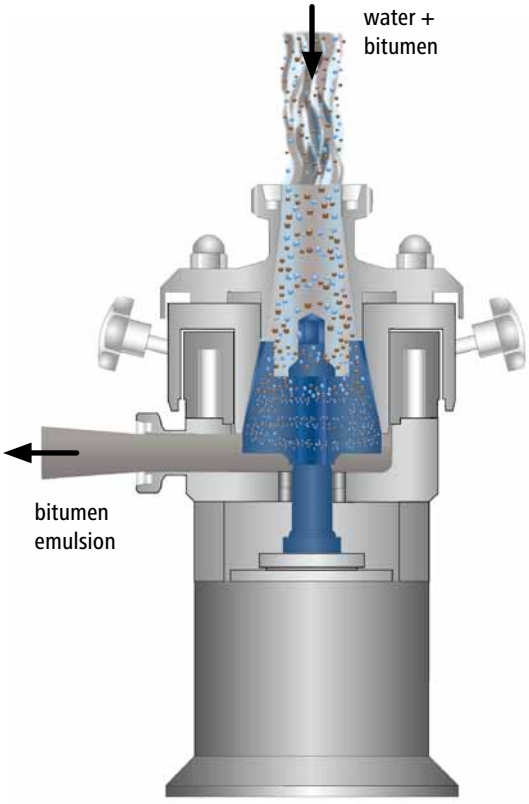
Specialty emulsions with up to 75 % binding material mass can be produced

Particle sizes of 2.0 micron to 2.2 micron d(50) are typically achieved

Mixing at temperatures over 100 °C is possible



IKA® Colloid Mill MK 2000



Bitumen emulsions are used as insulation against humidity, similar to water repellents and also as a bonding additive for road toppings and roofing papers.

Depending on their use, emulsions must have special mechanical characteristics regarding stability, coagulation, bonding, etc.

The main criteria are homogeneity as well as particle size distribution.

Through the quality characteristics achieved by the IKA® Colloid Mill MK 2000 we can guarantee that 50% of droplets of bitumen emulsion phases are less than 3 microns in size after only one pass.

A perfected and innovative design of the machines coupled with the precision milling capabilities of the mixing tools, guarantees a trouble-free and safe production.

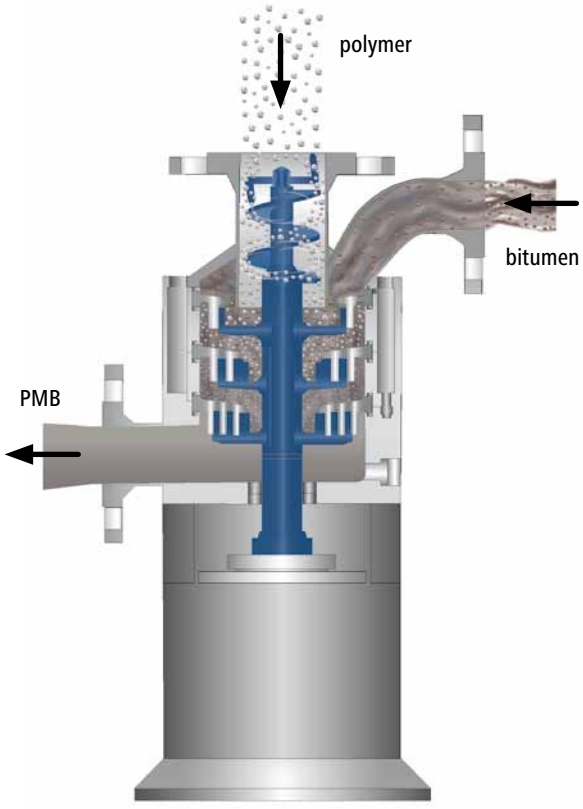
Continuous production of polymer modified bitumen

The production of high quality, polymer modified bitumen (PMB) is the main responsibility of the distributors for road and airport construction companies. Continuous process for the production of PMB is a completely new method exclusively developed by IKA®. The inline system DISPAX-REACTOR® DR 2000-PB is leading the bitumen industry into a new era of production: The polymer is dispersed perfectly inside the bitumen and the chemical cross-linking is therefore ensured within one single pass.

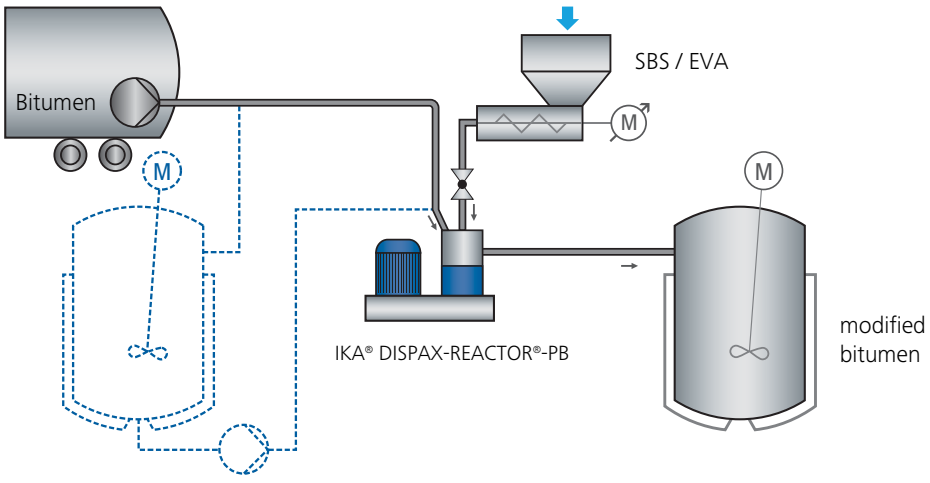
Up to now long stirring in big, heated vessels was necessary to dissolve the added polymer and maybe other additives such as sulphur. The long heating of the vessels, big and heavy stirrers, the space required, all this takes its toll on economic efficiency, flexibility and quality.

The new process – a continuous system – mixes and dissolves the polymer with the bitumen in only one pass. Both components are constantly fed and finely dispersed and homogenized in the dispersing machine.

The fully continuous process makes the producer to a great extent independent of production quantities. In former times such products could only be produced in time consuming batch processes. The new IKA® system with Bitumen Dispax revolutionizes the process of manufacturing polymer-modified bitumen. It saves time and resources while providing great flexibility during production.



Type size	Max flow capacity (l/h)	Max. flow capacity polymer (l/h)	Drive power approx. (kW)
DR 2000/10-PB	2.500	400	18,5
DR 2000/20-PB	6.000	900	45
DR 2000/30-PB	15.000	3.700	75
DR 2000/50-PB	30.000	7.200	160



Advantages of IKA® PMB Technology:

Constant mixing quality

Less process steps

Less time consuming

Less space requirement for machines and storage

Higher flexibility regarding production quantities

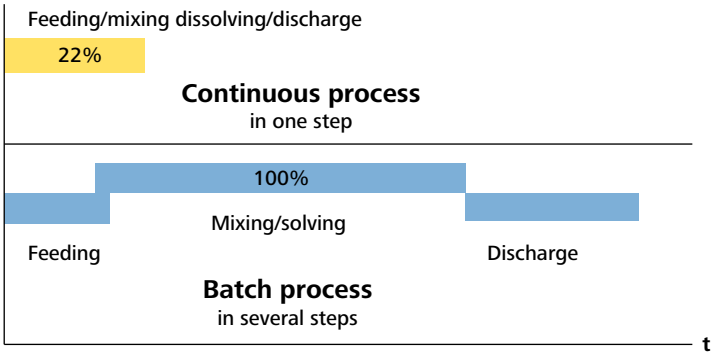
Cost saving

Feeding and conveying tool for polymer

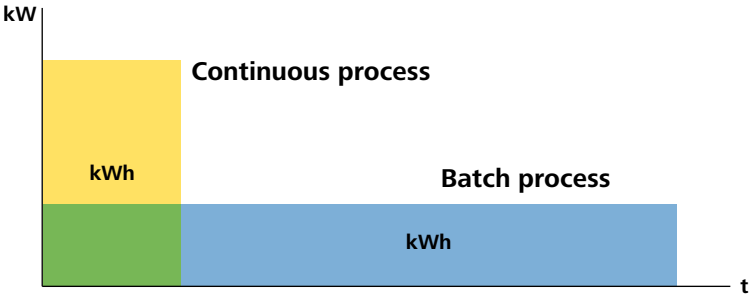
3-stage dispersing tool for polymer modification of bitumen

Pump wheel for higher viscosities

Inline vs. batch



Comparison of the time frame



Comparison of the energy requirement

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