HATCH

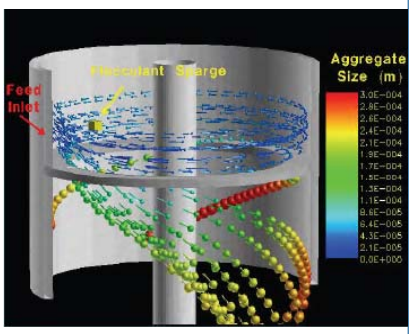
LIGHT METALS

P266E THICKENER & WASHER TECHNOLOGY

The P266 Improving Thickener Technology is a research and development project led by CSIRO (Commonwealth Scientific and Industrial Research Organisation), Australia's national science agency through AMIRA International. It aims to develop a holistic understanding of the operation to enhance the performance of gravity fed thickeners and washers for the minerals industry. For more information of the P266 project, visit www.P266project.com.

P266**E,** a subsequent phase of the P266 project, commenced in 2005. Building on research and science developed in earlier projects, the team of scientists, engineers and mathematicians aimed to deliver valuable results to P266E sponsors with the means to significantly enhance full scale thickener performance and related downstream processes.

As one of the 19 sponsors of the project, Hatch has exclusive rights to access 20 years of R&D and the latest design and modelling tools developed. Significant improvements in CFD simulation capabilities benefit sponsors wishing to use the project team to design the most efficient thickeners or to solve problems with existing installations.



Hatch, using these tools and research contacts, continues to provide innovative and sustained results for clients.

BENEFITS TO HATCH CLIENTS

Technology transfer and the model simulation capabilities allow Hatch to provide the most efficient and effective design for thickeners and washer technology. Actual benefits to Sponsor's clients demonstrated include:

- **Flocculation efficiency** improvements of **~50% to 200%** achieved
- **Overflow clarity** improvements of **~20 to 50%** achieved
- **Throughput** improvements of **~50% to 100%** achieved

A novel feedwell has been developed with far superior momentum dissipation, air dissipation, flocculation performance and discharge patterns to that achieved by the typical feedwell. Performance is estimated at two to two-and-a-half times more efficient in achieving aggregate size over a wide range of feed rate and solids concentration.

Model simulation time has already been improved two to four times with the latest software. Potential exists to increase this to eight to 10 times faster, making simulation design work achievable in days/weeks rather than months.

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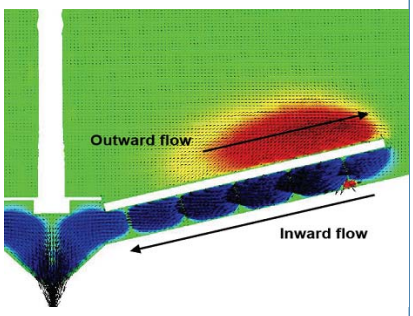
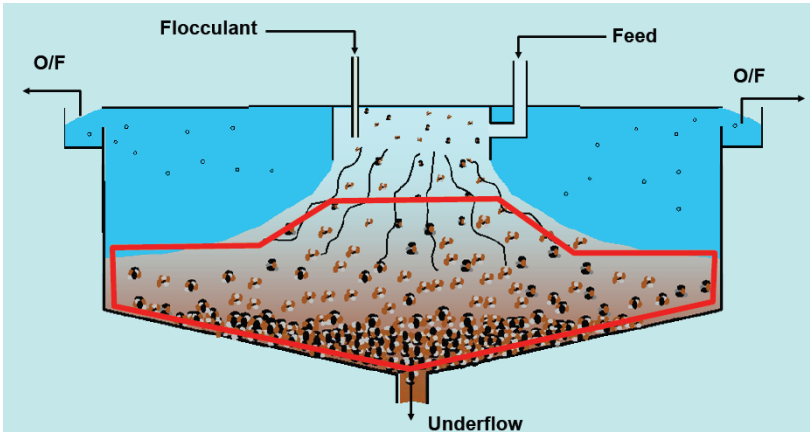
P266E THICKENER & WASHER TECHNOLOGY CONTINUED



Modeling of rake flow patterns

Hatch has access to the latest P266 modelling and design tools for all aspects of thickener, washer and settler designs. These include:

- Feedwells
- Clarification and overflow
- Flocculation
- Sedimentation and dewatering
- Rake operation
- Rake torque model
- CCD washer circuit modelling
- Thickener modelling, performance and design
- Population balance model
- Thickener design knowledge base
- Direct access to leading researchers.



Models are used to assess all aspects of thickener behavior and performance