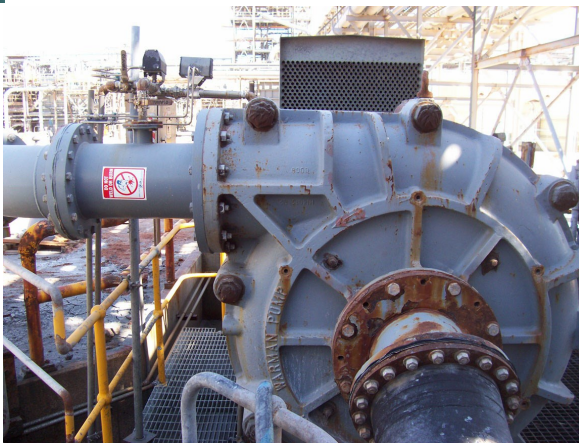


Materials Centre

Slurry & Water Hydraulic Engineering



The **Applus+** Materials Centre can provide engineering design and installation inspection and review for slurry and water hydraulic pipelines and associated pumping systems.

We have experience in designing pumping and piping systems for a range of mining applications, including:

- Open pit dewatering
- Underground mine dewatering
- Tailings pumping systems
- Mineral process plants
- Borefield systems
- Gravity systems

We use a combination of proprietary pipeline friction loss design software which have been developed from our own experience to model the piping systems. Existing site operational data is used where possible to ensure the design models provide an accurate representation of the pumping and piping systems.

The **Applus+** Materials Centre can also provide a slurry rheology testing service for client provided samples. Our small pipe/pump test loop provides a convenient method for determining the slurry rheology using relatively small samples.

Expertise

The Materials Centre is currently managed and operated by a team of dedicated professionals with extensive expertise in slurry pumping and long distance pipeline design. Our personnel have worked in the engineering and design for mining and mineral process plants for over 30 years, specializing in difficult slurry applications.

Slurry Rheology Testing

Current trends with tailings pumping often require transportation along relatively long distance pipelines. Combined with the presence of a high solids concentration, the slurry will have a high viscosity and will have a significant effect on the discharge head required for pumping. In order to more accurately determine the pipeline friction losses, it is essential to conduct slurry rheology tests on tailings samples. The rheology testing will provide information relating to the slurry viscosity at varying solids concentration, from which we can calculate the pipeline friction losses. Successful use of the right data will minimise errors in the design and selection of pipelines and pumping equipment.

The **Applus+** Materials Centre has developed our own purpose built recirculating pipe loop for measuring slurry rheology. The pipe loop is similar in operation to a tube viscometer, and is instrumented with high accuracy pressure transducers and variable flow control to enable accurate determinations of shear rate versus shear stress curves.

Viscous slurries are often treated as non-settling, however tests conducted at the Materials Centre often show that viscous slurries can be settling and the rheology relationships are often critical in good pipe line design.



Additional Services

Applus+ provides the following services as individual packages or combined to provide a total Asset Integrity Management programme.

- Advanced (non-intrusive) Inspection Services.
- Sub-sea Inspection Services.
- Engineering Design Solutions.
- Risk Based Inspection Planning.
- Inspection Management Services.
- In Service Inspection.
- Plant Life Management.
- Metallurgical Services.

Importantly, **Applus+** can also call upon extensive in-house expertise and resources for advanced inspection and conventional NDT, providing a total capability for management of through life plant integrity.

Applus+, in collaboration with our local and international partners, has extensive experience in the application of these services to a wide range of industries including:

- Oil & Gas.
- Petrochemical.
- Refining.
- Ore Processing and Handling.
- Power Generation.



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