

CURISINTEGRITY



LEADING THE INDUSTRY
IN CEMENT INTEGRITY
SCIENCES AND SOLUTIONS



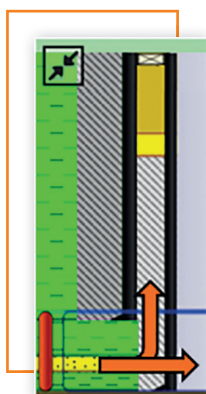
CURISTEC's CurisIntegrity Service helps well operators and cement service providers design cement integrity solutions for the life of the well. CurisIntegrity Service combines, the latest cement sheath modeling sciences, proprietary laboratory cement testing and over 50 years of cementing operational experience to develop well specific cement integrity solutions.

“Since 2002, increased industry focus to construct wells with ZERO fluid leakage. Cement sheath integrity for the life of the well is a major component to achieve that goal.”

	Liquid		Porous solid		
	Slurry design	Placement	Hydration	Short term	Long term
When					
Avoid	Pumpability & stability issues	Loss of integrity Mud displacement Losses/gains	Loss of integrity Gas migration	Loss of integrity Mechanical damage	Loss of integrity Mechanical damage Chemical degradation
Adjust	Cement design	Density/Rheology Compatibility Hydraulics	TCHM properties Initial stresses	TCHM properties	TCHM properties
Check	Lab testing QA/QC	Simulation Monitoring	Simulation Logging Monitoring	Simulation Logging Monitoring	Simulation Logging Monitoring
Constraints	Geology, Regulation, Wellbore & Operations				

THM: Thermo-hydro-mechanics TCHM: Thermo-chemo-hydro-mechanics

▲ Periods of the life of a cement sheath ▲



Cement sheath integrity loss drives lower returns on investment due to:

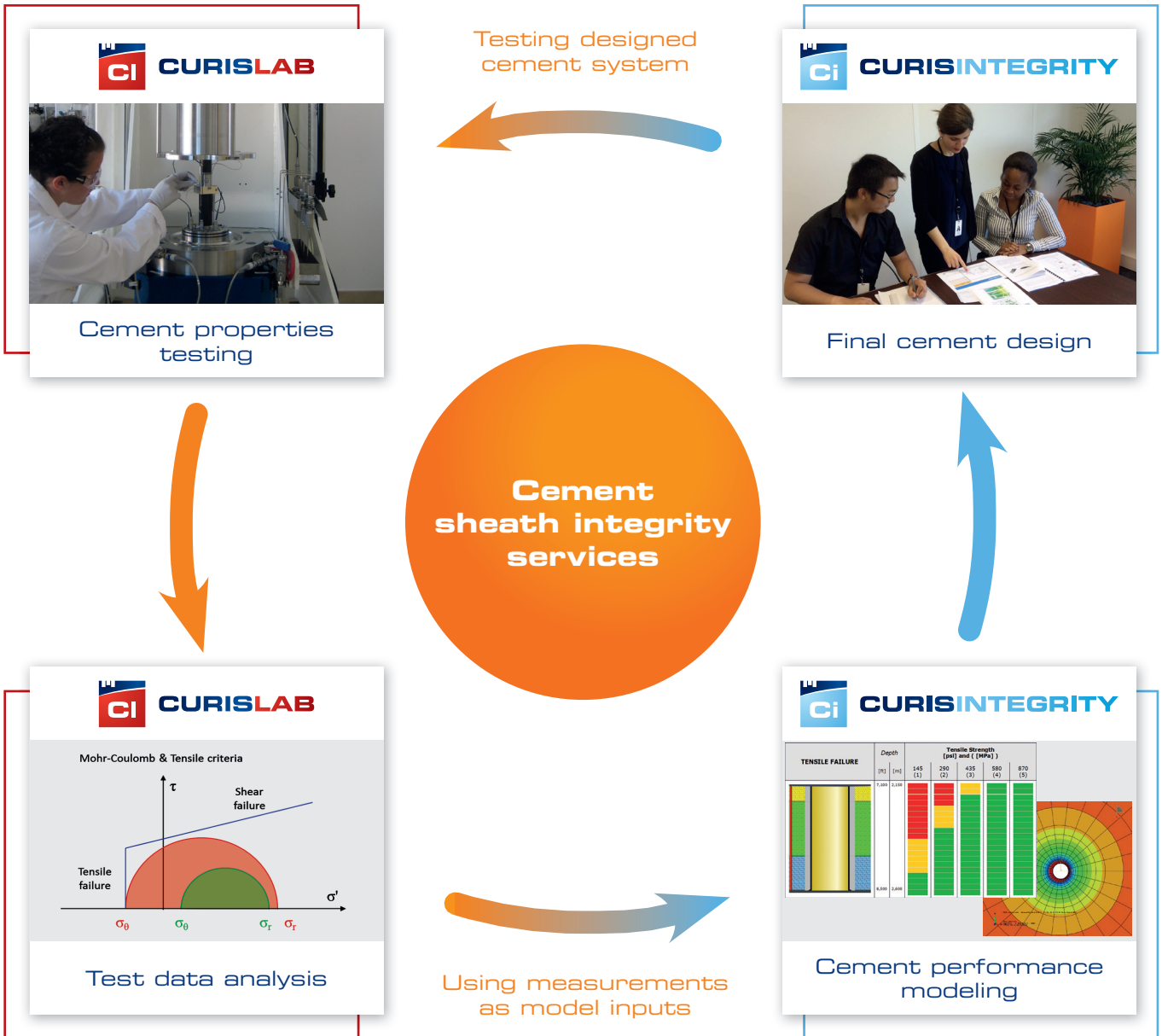
- Well safety hazard
- Higher operating expenses
- Loss of producible reserves
- Early well abandonment



CURISINTEGRITY ENGINEERING

DESIGN CEMENT FOR THE LIFE OF THE WELL

CURISTEC engineers use the latest sciences, technologies and operational experiences to proactively identify well events that can damage the cement sheath. Our engineers assist you in designing cement solutions for the life of your wells. **CURISTEC** helps you at any stage of your project from initial to final design, and even post-mortem analysis.



CURISINTEGRITY Quick Look is a quick and cost efficient method of evaluating if a cement sheath is difficult to design to ensure its mechanical integrity. It identifies if a standard cement system can provide cement sheath integrity for the life of the well. Additionally it compares standard and advanced cement sheath designs and reports a failure risk ranking for each cement design. Quick Look is easy to use and is an ideal cement integrity tool to use during the initial well planning stage.



CURISLAB

CEMENT TESTING FOR
THE LIFE OF YOUR WELL

CURISLAB works with operators and cement service providers to design cement systems for the life of the well.

CURISLAB laboratory performs cement system testing according to API/ISO methods to measure slurry density, thickening time, rheology, fluid loss, stability, SGS, compressive strength, mechanical properties...



Cement Testing

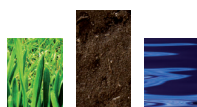
- ISO 9001 certification
- Conventional testing
- Mechanical properties
- Gas tight, Fluid flow
- Spacer

Engineering Services

- Project specific test designs
- Test data analysis
- Report generation
- Auditing
- Training

Quality & performance with CURISDATA

- Complete laboratory quality management system
- API/ISO quality process adherence
- Optimized laboratory software for data and report exchanges





CURISINTEGRITY

KEY TOOL FOR CEMENT SHEATH DESIGN

CURISINTEGRITY software evaluates the risk of losing cement sheath integrity during the life of a well.

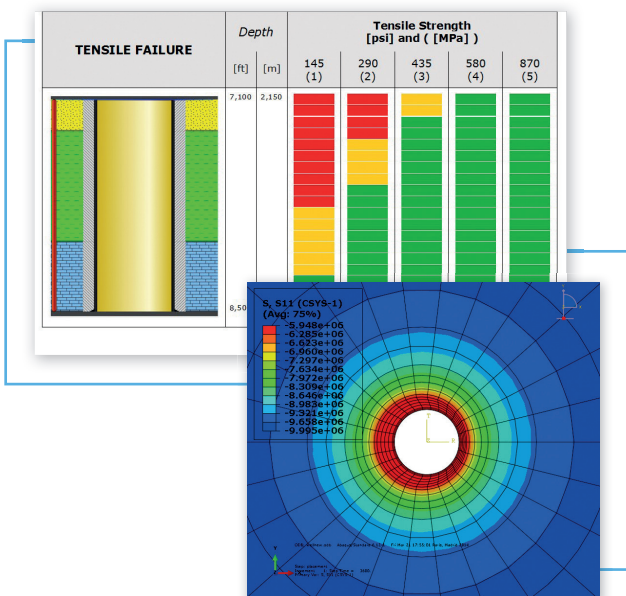
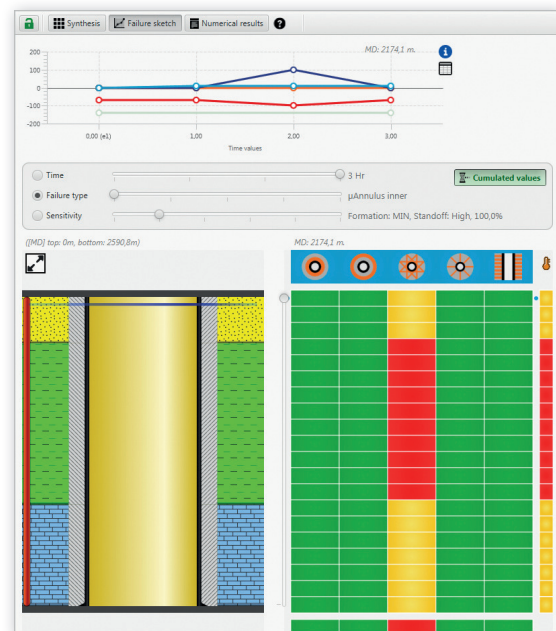
CURISINTEGRITY models are based on over 10 years of R&D and validated by recognized industry publications and extensive laboratory testing.

CURISINTEGRITY modeling capacity

- Mechanical behavior from liquid to solid state
- Actual initial state of stress
- Heat of hydration
- Cement shrinkage
- Complete thermal loadings
- Gas migration potential

CURISINTEGRITY user-friendly interface

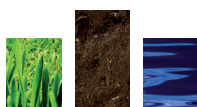
- Simulates 5 damage modes for the entire cement sheath
- Available databases for formation, cement, steel and fluid properties
- Embedded sensitivity analysis



Two versions of CURISINTEGRITY:

- **CURISINTEGRITY Analytical** version is easy to use with no FEA expertise required. It provides a complete view of the risk of cement sheath damage for your wells.
- **CURISINTEGRITY Numerical** version is a finite element analysis model for all types of wells, especially when drilled in salt, or with low casing standoff, or in compacting formations.

Multi-lingual



CURISTEC is a privately-owned industry recognized technology company, specializing in oil & gas geomechanics, wellbore integrity, cement integrity, materials testing, engineering software and consulting services.

With engineers in France, Vietnam, Americas, and Abu Dhabi (CurisCotta), CURISTEC is globally positioned to deliver solutions based on an integration of science, engineering and field experience for your projects. **The quality of the service is the same independently from where it is provided.**

CURISTEC's dedicated materials testing laboratory in France and Abu Dhabi (2016), can easily and quickly test **the properties of your formations and cements.**

CURISTEC creates leading edge user friendly **software applications based on the latest sciences and technologies** with CurisIT developers located in Spain and China.



CURISTEC delivers complete cement integrity technologies and services for your well



CURISTEC Engineering and Consulting

- Works with wells planning team and cement service providers
- Performs cement integrity modeling and analysis
- Proactively assist in cement sheath design programs
- Conducts diagnostic studies in the event that cement integrity is loss



CURISLAB Cement Testing and Services

- Complete set of cement testing and analytical services
- Works with operators' wells team to provide cementing laboratory testing and data analysis
- Supports cementing services providers with non-residential testing capacity and analytical services
- Quality ensured via ISO 9001 certification

CURISINTEGRITY Modeling

CURISTEC's suite of cement integrity models compute the risk and mode of cement sheath damage



CURISINTEGRITY Quick Look

- Cost efficient cement design risk ranking
- Ideal use during initial well planning stage

CURISINTEGRITY CI-A

- Analytical cement integrity model
- Predicts 5 modes of cement failure per simulation
- Performs 6 modes of sensitivity analysis per simulation
- Map cement sheath integrity along wellbore in one run

CURISINTEGRITY CI-N

- Finite element analysis model
- Applicable for all well types
- Preferred model for Salt, Compacting formations and Low casing standoff



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