ALWAYS INNOVATING

We continuously seek better ways to investigate and analyze engineering problems and share our results. Our staff works closely with the firm's CORE studio to develop new technology – such as simulation tools, FIM and TT SmartMaps (an app that compiles project and GIS data into a single, interactive map viewable on a phone, tablet or PC) – that helps us better serve our clients. We also develop flexible data-acquisition systems to collect and process in-situ information.

Collaboration with colleagues in our Edinburgh, Scotland testing lab allows us to delve into experimental mechanics and devise testing protocols for experimental verifications.

THORNTON TOMASETTI OPTIMIZES THE DESIGN AND PERFORMANCE OF STRUCTURES, MATERIALS AND SYSTEMS FOR PROJECTS OF EVERY SIZE AND LEVEL OF COMPLEXITY.

An employee-owned organization of engineers, scientists, architects and other professionals collaborating from offices worldwide, we support clients by drawing on the diverse expertise of our integrated practices. We are committed to being a sustainable and enduring organization and the global driver of innovation in our industry.

INNOVATION AT OUR CORE

CORE is our innovation incubator, a vehicle for collaborating with project teams, academic institutions and other partners – in the AEC industry and beyond – to develop and market new technologies.

CORE lab identifies and nurtures R&D projects – ranging from incremental to transformational – to create new capabilities, methods or products.

CORE studio provides technology-focused expertise to all our practices, enhancing collaboration and responsiveness through a wide range of creative initiatives.

Thornton Tomasetti

www.thorntontomasetti.com

FORENSICS

We investigate engineering problems and provide evidence-based solutions founded on rigorous science and physics. We assist attorneys, property managers, building owners, contractors, manufacturers and design professionals with a wide range of engineering and architectural issues.

Thornton Tomasetti

WHAT WE DO

Our multidisciplinary professionals help clients mitigate engineering issues of all kinds and work to prevent future problems. Decades of experience enable us to quickly generate hypotheses and evaluate them based on physical evidence, interviews and operational data.

ADVANCED ANALYTICS

We apply specialized techniques to develop solutions for complex design tasks, compromised structures and forensic investigations. We use scientific approaches to analyze the behavior of soil, structures and equipment subjected to loads from the environment, construction, natural hazards and extreme events. Expertise in advanced finite-element analysis and computational mechanics helps us identify underlying issues and determine targeted performance levels. We also engage in research and development for new technology.

EXPERIMENTAL MECHANICS

When evidence is required to support mathematical models, we offer physical testing, data processing and reporting. Our laboratory and testing facilities support tests on land as well as over or under water. We also offer laser scanning and structural monitoring services.

DECONSTRUCTION ENGINEERING

Our engineers analyze all components, conduct engineering reviews, calculate demolition and debris footprints, and analyze stresses and vibrations to aid development of safe and efficient demolition scenarios and logistics plans.

EMERGENCY RESPONSE

When a structure is crippled or collapsed, we evaluate the site, preserve and document forensic evidence and provide recommendations to reduce post-accident hazards. For 24/7 emergency response assistance, call (+1) 877.933.9737.

LITIGATION SUPPORT

We apply design experience, forensic expertise, process understanding and advanced analytical tools to assist attorneys with expert witness services in dispute resolution, court hearings, arbitration or mediation. We investigate construction defects and evaluate for standard of care and for design errors and omissions.

ARCHITECTURAL FORENSICS

Our forensic architects diagnose building deficiencies and design practical, cost-effective repair programs for interior and exterior issues, including water intrusion, condensation, air and water infiltration, thermal issues and material failures.

FAÇADE FORENSICS

We offer façade evaluation services tailored to forensic investigations and litigation support, helping to resolve disputes, solve construction problems and determine cause and origin of façade failures.

MECHANICAL FORENSICS

With experience in the design of HVAC, fire and plumbing systems, utility plants, renewable energy plants, and industrial equipment, our professionals provide forensic services for a wide range of industries and building types.

ELECTRICAL FORENSICS

We conduct scope-of-damage and cause-and-origin investigations for low- and medium-voltage power distribution systems and are experienced in investigations involving renewable energy sources such as wind turbines and solar arrays.

HOW WE WORK

OUR EXPERTS ARE ACTIVE PRACTITIONERS & VICE VERSA

As a result, our testimony is informed by practical field experience, and our field practice is informed by lessons learned in legal settings.

THERE IS NO SUBSTITUTE FOR RELENTLESS CRITICAL THINKING

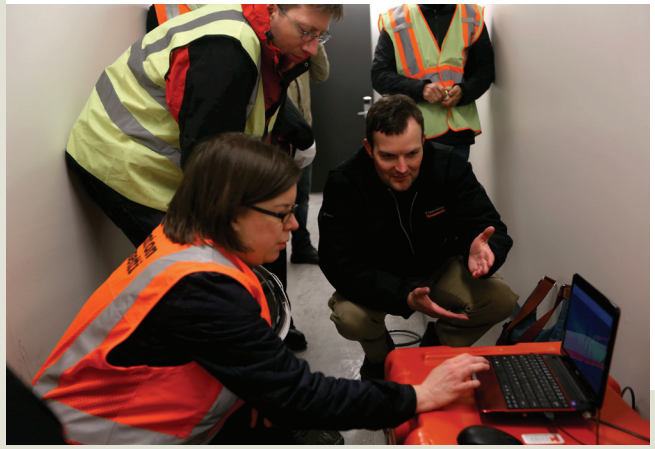
We keep delving until we're certain we have the relevant facts. We begin by developing an understanding of the problems, constraints and desired outcomes, then validate our ideas using a scientific approach and advanced analytical tools.

WE CLARIFY COMPLEXITY

Our aim is to teach, illustrate and communicate our ideas as clearly as possible. Our visualization specialists develop models, renderings and animations that accurately and precisely present mechanics and mathematical calculations.

WE DON'T GO HOME UNTIL THE JOB IS DONE PROPERLY

In emergency response work, we maintain a 24/7 presence on-site to ensure safety. And in our deconstruction work, we make sure it's all down before we leave a job site.



Bess Adler / Thornton Tomasetti

Vice President Marguerite Pinto (front left), Senior Project Engineer Callum Norris and Project Engineer Pierre Ghisbain check test data during installation of our fluid harmonic damper in a Brooklyn high-rise.

PROCESS FORENSICS

With expertise in a wide variety of manufacturing processes, we provide nuanced investigation into fires, explosions, design and construction defects, and professional liability. We offer process analysis, code studies, hazard analysis and cause-and-origin investigations in facilities where hazardous materials are used or processed.

STRUCTURAL FORENSICS

We offer investigative and analytical services for everything from chronic performance failures to catastrophic collapse. We perform safety and damage assessments, reliability and risk analyses, component and materials testing, and adjacent construction monitoring.

SWALLOW ACOUSTICS NOISE & VIBRATION INVESTIGATION

In 2017, Thornton Tomasetti acquired Swallow Acoustic Consultants Limited. Our professionals test, quantify, analyze and find the sources of acoustic and vibration problems.

SPECIALIZED EXPERTISE

ADVANCED FINITE-ELEMENT ANALYSIS (FEA)

We use FEA to understand the behavior of structural systems and components, gases, flows and multi-body interactions, evaluating complex conditions and communicating the scientific facts using advanced engineering-simulation tools.

SCIENTIFIC & ENGINEERING SOFTWARE DEVELOPMENT

Thornton Tomasetti develops software to solve challenging engineering problems. Examples include the Flex family of finite-element codes, including Onscale; VistaMat, for advanced material modeling; and FacilityBlast VCE, a fast-running computational fluid dynamics tool that accurately predicts vapor-cloud explosion loads.

CUSTOM ANIMATION

We use applied mathematics and mechanics to simulate physical events and determine their controlling parameters. Graphical animation visually re-tells an event, and visualizations convert the mathematical outcomes into something we can see and more easily understand.

FORENSIC INFORMATION MODELING (FIM)

We developed a better way to manage and analyze data in a 3D or 4D model. Data is linked to model components for easy retrieval, keyword queries and statistical analysis. Our FIMs can quickly generate reports and visualizations for clear, persuasive communication of complex technical issues.

DATA COLLECTION & PROCESSING

We use laser scanners, thermal cameras, structural monitoring data-acquisition equipment and other sensors to obtain critical information on the behavior, position and condition of the structures and components under examination. Handheld devices enable us to collect and process data in real time with mapping technology. We are also well-versed in process data analysis to characterize the variation of critical data.