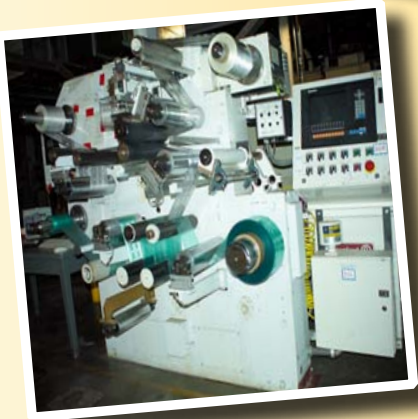
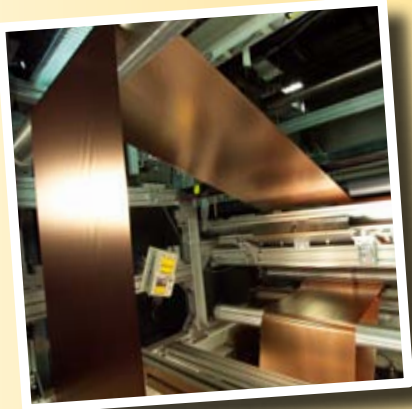


MEDIA CONVEYANCE FACILITY (MCF)



Innovative Solutions
for web handling & roll-to-roll processes



We prove your concepts ... to enable your production

Use our Media Conveyance Facility to help you develop and improve your product handling.

Optimation's 5,000 sq. ft. Media Conveyance Facility (MCF) features experimental and analytical web handling facilities, equipment and development engineering support, custom machine capability and training.

We offer you the flexibility to solve all types of web-related production problems, test new product features, characterize and quantify capital project investments without the cost and burden of running a laboratory of your own or diverting costly production time to pursue in-house experiments. Our configurable facility and team can customize equipment to clients' product and process development needs.

Expertise You Can Count On

In addition to our facility and equipment, our MCF is led by a group of engineers, technologists, designers and tradesmen with over 200 years of combined mechanical and electrical experience in web handling.

Our design team has over 40 years of combined experience, with backgrounds in web conveyance, the manufacturing industry, and research and development. Our staff is experienced in designing and building prototype manufacturing equipment as well as developing and implementing processes in manufacturing facilities.



We Work with You to Solve Your Problems:

PRODUCTION QUALITY

- ✓ Tracking
- ✓ Roller Wear
- ✓ Tension (Bagginess / Strain)
- ✓ Speed
- ✓ Excess Waste



Evaluate/troubleshoot existing process capability, recommend improvement options, model and test selected upgrades.

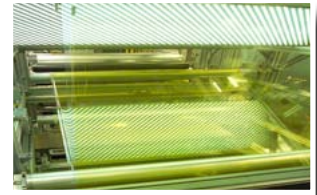
Example Projects

- Determined root cause / corrective action to eliminate fiberglass web lateral tracking issues and reduce roller wear in fiberglass coating facility.
- Provided on-site winding characterization of a multi-layer blown film process, followed by winding recommendations to enable client to improve web bagginess issues.

PROOF-OF-CONCEPT

- ✓ New Product Production Characterization
- ✓ Capital Project Justification

Product characterization, process system analysis and customer requirements, process machine configurations and specifications, detailed design, build, install and commissioning.



Example Projects

- Utilized Optimation's MCF to develop and demonstrate robust conveyance components and a web path system to enable wrinkle-free conveyance of new product in an existing production machine.
- Provided winding and conveyance machine commissioning for a new copper foil manufacturing facility for winding optimization, enhanced process understanding, elimination of conveyance defects, and increased speed capability.

EXAMPLE EXPERIMENTS

Wide Web Winding

- Interleaving winding - enable noncontact film winding
- Cardboard core torque transmission - low cost core
- Induction heated knurling - one-sided film edge knurling
- Film separation/peeling - new product development
- Layon roller study - high speed paper and film winding

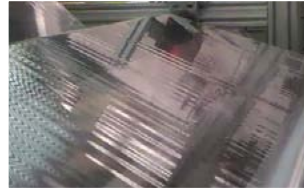
Roller Conveyance

- Roller surface - high speed conveyance
- Bowed roller - web spreading
- Web peeling - new product
- Anti-wrinkle and web spreading - paper, film, foil



PRODUCT QUALITY

- ✓ Creasing
- ✓ Wrinkling
- ✓ Breakage
- ✓ Conveyance Defects



Evaluate and characterize existing product, provide product conveyance and handling predictions based on measurements and modeling, recommend improvement options based on lab experiments.

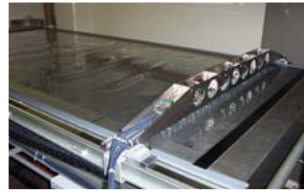
Example Projects

- Developed coating machine tension models to enable process tension optimization and robust conveyance for client's paper and PET webs; this allowed the client to achieve reduced web creasing.
- Utilized Tekscan nip pressure measurement equipment and field alignment tools to perform a machine assessment and assist in the resolution of lateral tracking issues / wrinkling issues in a multi-layer film conveyance line.

OEM MACHINE /COMPONENT DEVELOPMENT

- ✓ Roller Design Characterization
- ✓ Web Path Specifications

Analyze and model equipment performance based on machine design; test performance of critical machine parameters; provide machine specifications based on models and experimental testing.



Example Projects

- Provided testing data and video demonstrating the effectiveness of a roller manufacturer's unique vented roller surface.
- Assisted machine equipment manufacturer to develop robust roller design and web path requirements specific to their webs.

Air Conveyance Development

- Airbar clearance - reduce film edge contamination
- Reverser clearance - eliminate web contact
- Weave - minimize film lateral oscillations
- Hybrid turnbar/rollers - wrinkle-free product

Narrow Web Winding and Conveyance

- Track off - elevated temperature on film
- Layon roller - high speed roll winding
- Winding product & process - verify predictive models

Narrow Wound Roll Quality

- Roll telescoping press - roll integrity
- Sidewall gauge - roll straightness
- Inner layer pressure measurements - roll size

We Teach You Using Hands-On Training Techniques:

Training and Seminars: Expert-led classroom sessions to teach principles and practices of web-based manufacturing, web behavior and response to a wide variety of manufacturing processes.

University and Academia Applications: Develop state-of-the-art web handling knowledge through linkages with academic communities; our MCF is available for universities to utilize in undergraduate or graduate studies.

Training and Consulting Alliance:



Optimization teams with Mr. Tim Walker, CEO of TJWalker & Associates, nationally recognized as a leader in web technology. This alliance offers world-class training, experimentation and consulting opportunities leveraging the MCF.

Optimization and TJWalker offer several courses each year, with subjects such as Nip Measurement, Wrinkling, Roller Performance, Winding and many others. Our half lecture/half hands on approach results in training that resonates with users who can apply their newfound knowledge in the field.

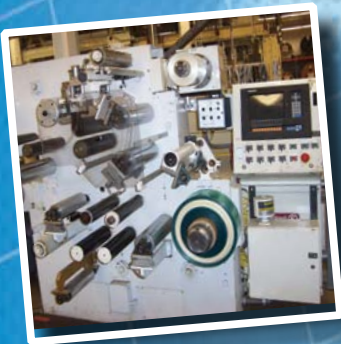
For updated class schedules, check www.optimization.us/MediaConveyanceFacility.aspx



Our customers become long-term partners.

Experience the full breadth and depth of what Optimization has to offer. When embarking on a project, our staff truly become client advocates, applying their creative expertise, attention to detail and professionalism to see problems through to resolution. Optimization builds lasting customer relationships by consistently providing superior project services.

Engineering • Design • Automation • Fabrication • Installation • Construction • Commissioning • Maintenance



World Class Machinery

Thin Web Rewinder

- For very low tension, low traction experiments on ultra thin webs
- Maximum Web Width: 55 inches (1397 mm)
- Line Speed Capability: 2000 fpm (610 mpm)
- Web Tension Capability: 2-50 lbs
- Pressure roller winding: 5-50 lbs contact force range
- Can operate in rewind (unwind-wind) or endless band mode
- Capable of conveying fractional mil web thicknesses
- Low hysteresis float roller design for regulation of very low web tension

Laminator

- Used for combining and peeling of different webs
- Maximum Web Width: 14 inches (356 mm)
- Line Speed Capability: 175 fpm (50 mpm)
- Web Tension Capability: 1.5 lb/in (3.5 lb/in through nip)
- Nip Roller Capability: 5-100 lbs contact force range
- Readily configurable to multiple conveyance geometries
- Three independent drives: 2 winders/1 nip drive - braked unwinders
- Load cell control

Narrow Width Rewinder

- Rounds out conveyance experimentation capability in width range of 1 to 5 inches
- Maximum Web Width: 5.5 inches (140 mm)
- Line Speed Capability: 4000 fpm (1219 mpm)
- Web Tension Capability: 2-50 lbs (9-222 N)
- Pressure roller winding with 5-25 lbs contact force range
- Environmental chamber for studies at controlled temperature/ humidity conditions
- Breadboard design for maximum web path flexibility

Capabilities

Measurement

- Friction - web/web and web/roller
- Surface roughness - webs and rollers
- Radial (winding) and tangential modulus
- Single and multi-layer thickness
- Planarity, flatness
- Pressure measurement for multiple web handling and wound roll applications

Modeling

- Winding - high speed, thermoelastic, visco elastic, width effects
- Machine web tension profile - static and dynamic
- Web path design and control selection
- Air conveyance-air pressure, web deflections
- Roller traction - product and process interactions
- Library of over 50 predictive models supporting a wide variety of web handling conditions

Drives and Controls

- Fractional horsepower to high horsepower requirements
- Registration
- Tension control
- Flying splices, unwinders and winders
- Drive performance testing and analysis
- Machine direction and cross machine controls
- Vibration, stress and thermal profile feedback systems
- Roll winding torque profiles
- Web steering

Optimization Quality System: Registered ISO 9001:2008
and Control System Integrators Association - CSIA Best Practices

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