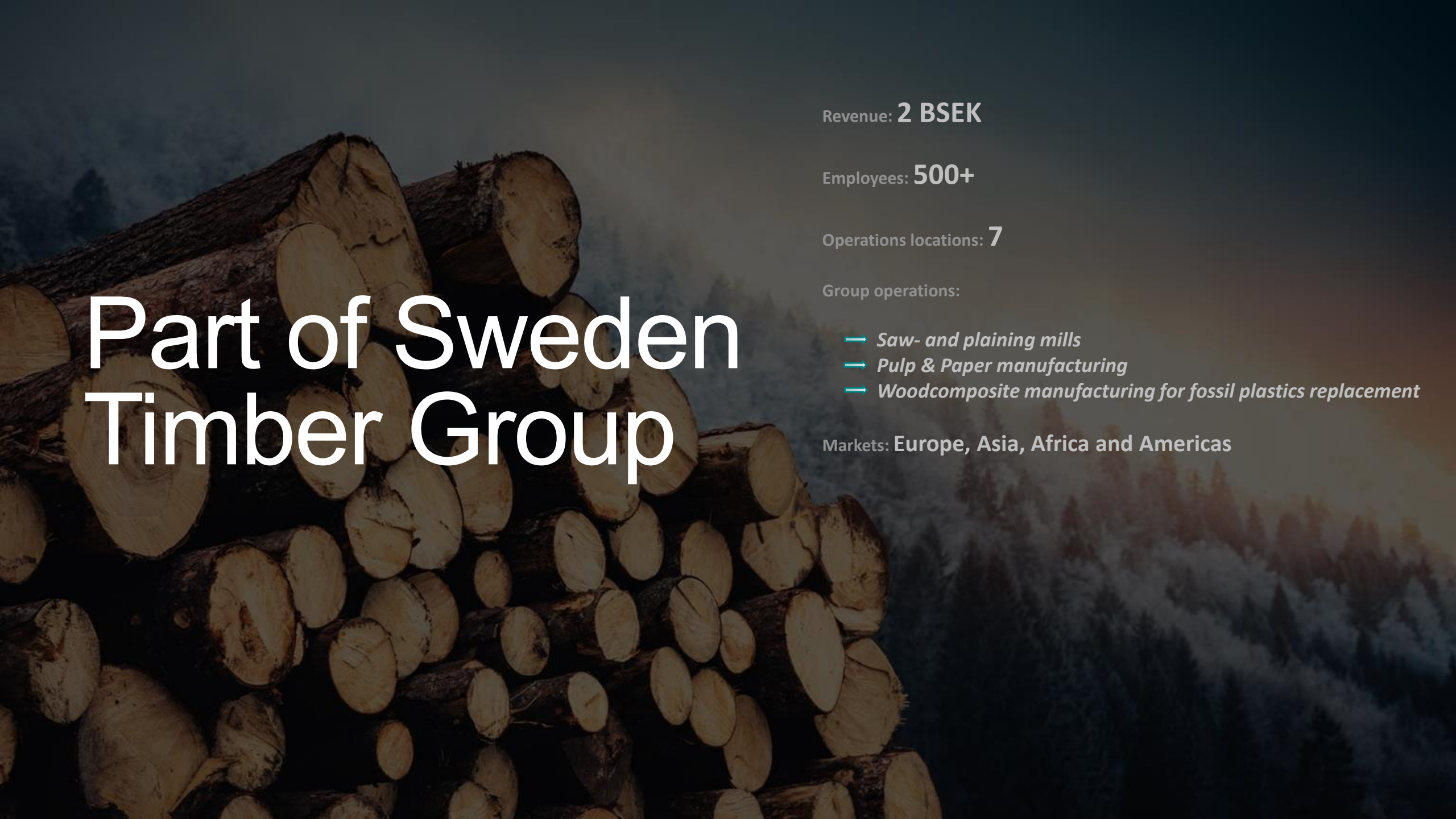




DuraSense®

by Woodcomposite Sweden AB





Part of Sweden Timber Group

Revenue: **2 BSEK**

Employees: **500+**

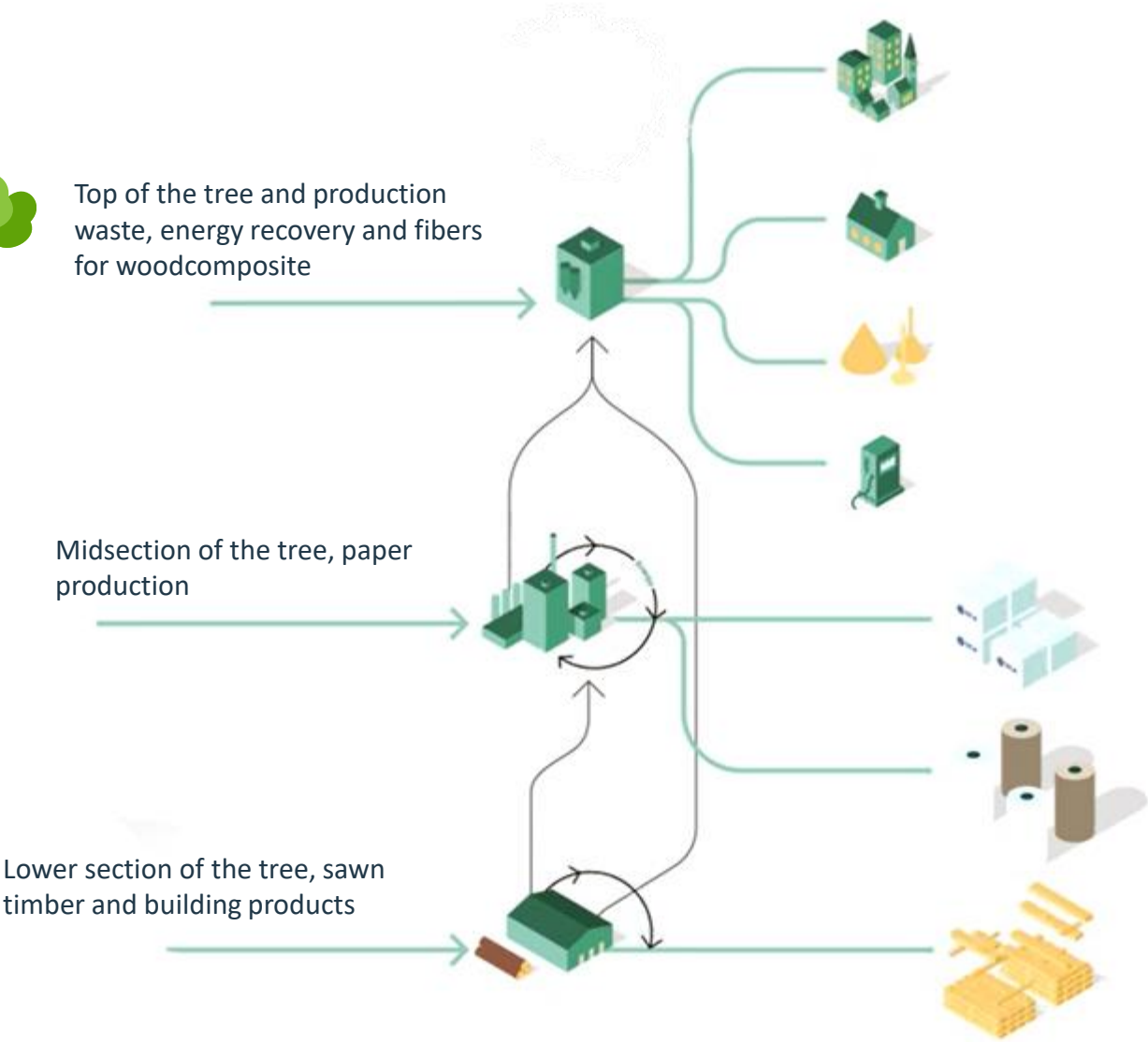
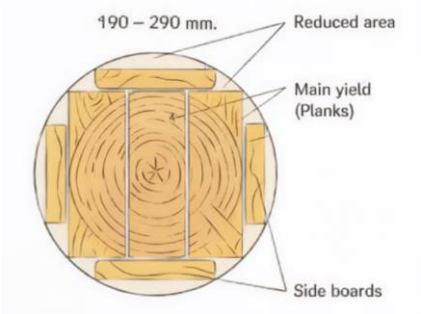
Operations locations: **7**

Group operations:

- *Saw- and planing mills*
- *Pulp & Paper manufacturing*
- *Woodcomposite manufacturing for fossil plastics replacement*

Markets: **Europe, Asia, Africa and Americas**

We use all parts of the tree in our products.





Woodcomposite Sweden

Replace fossil plastics – with the power of nature.

- With DuraSense, you can **replace up to 97% of fossil plastics** and reduce CO2 emissions by more than 90%.
- We compose and develop materials made from **Nordic wood fibers from spruce forests and biopolymers** from renewable resources like vegetable oils. The material is suitable for a wide range of applications due to its mix of properties.
- Our price is on par with the fossil plastics found in today's most common products.
- Our materials are a drop-in solution, meaning they work with existing machinery and tools for **injection molding, extrusion, and 3D printing**.
- We are a Swedish entity passionate about **innovation, quality, and climate-smart solutions**.

Reach out to us if you are interested in hearing more and acting. We would be thrilled to discuss how we can help you achieving your goals for a sustainable future where quality is not compromised.

WWW.WOODCOMPOUNDS.COM

Our portfolio consists of three product families to fit a wide range of technical requirements

Pure



Purest grades with a low amount of additives

Plus



Performance enhanced to be flexible and have enhanced impact resistance

Prime



Our highest performing grades for demanding applications, developed to replace engineered plastics.



Certified to meet customer demands

Chemical substances

REACH Compliant. PFAS free.

Wood sourcing

FSC® & PEFC® Chain of Custody. EUDR compliant.

Food Applications

EU10/2011, GB4806.6-2016. US FDA.

Production

According to GMP

Toys

EN71-3, GB6675.1-2014

Quality

ISO 9001/14001/45001. LCA ISO 14044.

Bio based polymers

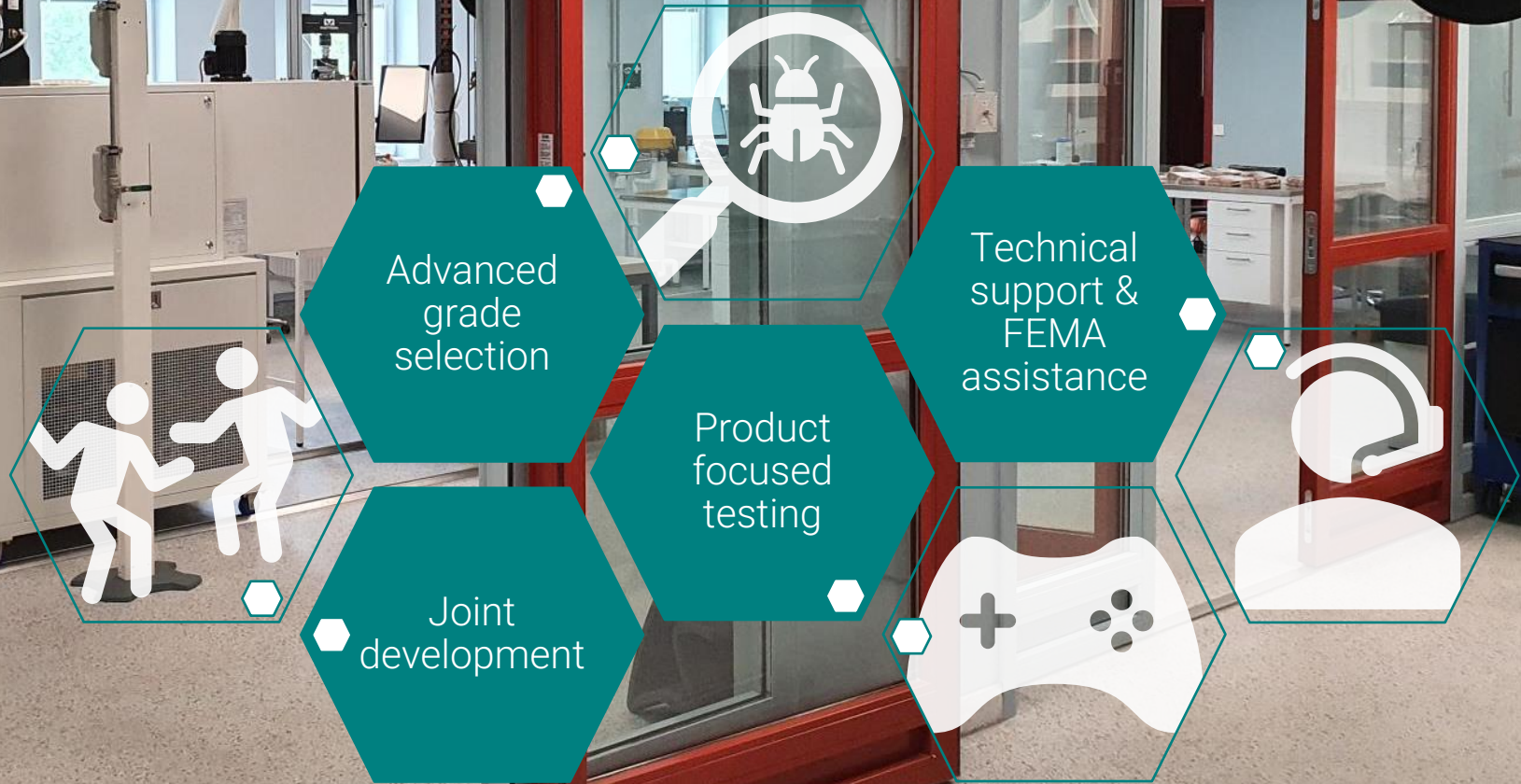
ISCC Plus certification for entire supply chain and multiple bio-based feedstocks and renewables



Laboratory Services



Advanced development Lab, Hylte, Sweden



Philosophy

- Work closely with partners & customers
- Expand our capabilities as needed to create long-term business
- Fast and uncomplicated to work with



- Instron 341TM-50
- 50kN or 5kN load cell
- Tensile & Flexural testing
- Extra large bending fixture
- Extensometer
- Many clamps available
- Environmental chamber, T up to +350°C, can be equipped for -100°C
- Fixtures for ILSS, Laminate compression and many others
- Hegewald & Peschke Inspekt Blue
- 10kN load cell
- Tensile & Flexural testing



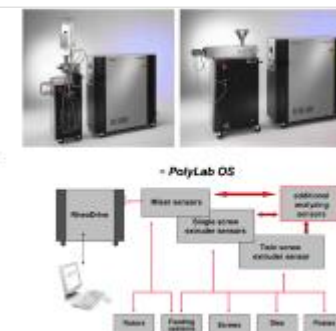
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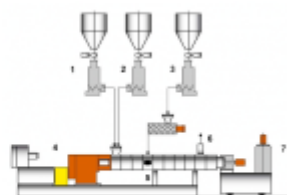
- Zwick HIT5.5P
 - Up to 5.4 Joule, several pendulums available
 - Charpy
 - Izod
- Cometech Notch Cutter
 - Enables testing of reproducible Charpy & Izod notched impact testing



- Thermo Scientific HAAKE PolyLab System
 - Twin-screw extruder Rheo PTW16, capacity ~2kg/h
 - Rheomix batch-mixer
 - Dosing units
 - Pelletizer & water bath
 - Mini-jet injection moulder



- ICMA Co-rotating twin screw extruder
 - Capacity ~50kg/h
 - Side feeder
 - 9 dosing units enabling advanced formulation work
 - Under-water pelletizing
- 2x 100L desiccant dryers
- Semi-automatic bagging station



- Production scale injection moulders
 - Engel Victory 120 ton
 - Engel Victory 160 ton
- Able to produce articles up to ~400g*
- Test moulds available
 - Universal test specimens "dog bones"
 - Flow spiral
 - Impact test specimens
 - Colour plates



- Göttfert Capillary Rheometer
 - High-pressure
 - Determine flow behaviour and viscosity of thermoplastics and rubber
 - Wide shear rate range
 - Modules for thermal conductivity, PVT, Die swell and more can be added
- Instron CEAST MF30
 - Measuring MFI/MVR
 - Variable weight



- CamSizer X2
 - Flexible Size and Shape Analysis
 - High-resolution image analysis
 - Can measure particles in dry state (X-Jet) or in wet dispersion (X-Flow)
 - Individual particles can be assessed
- Retsch AS 200 Sieve Shaker
 - Suitable for dry and wet sieving
 - 3-D throwing motion



- Erichsen Lineartester 240
 - Scratch hardness tester
 - 0.5 – 40 N
 - Variable test speed
 - Movement guide
- Cooper Friction skid tester
 - Assessment of surface friction & skid resistance properties



- Laser cutter/engraver
- Variety of ovens
- Access to full paper lab
- 3D-printers
 - FDM
 - SLA
- Fiber flash tube dryer*
 - 300 kg/h
- Fiber compactor*
 - 350 kg/h
- Impact mill Jehmlich Rekord 212
- Colour & Gloss meters
- Optical microscopes with camera



* In need of some T.L.C. before use

Universal testers

Instruments:

- Instron 34TM-50
 - 50kN or 5kN load cell
 - Tensile & Flexural testing
 - Extra large bending fixture
 - Extensometer
 - Many clamps available
 - Environmental chamber, T up to +350°C, can be equipped for -100°C
 - Fixtures for ILSS, Laminate compression and many others
- Hegewald & Peschke Inspekt Blue
 - 10kN load cell
 - Tensile & Flexural testing



Table Model Testing Systems

For higher force applications, the 3400 dual column table model series provides up to 50 kN capacity available in standard and extra height options.



DMA with Climate Chamber

Instruments:

- Instron Electropuls E3000 Linear torsion
 - 250N and 5kN Dynacell
 - Dynamic Extensometer
- Instron Humidity Chamber
 - $-30^{\circ}\text{C} \dots +180^{\circ}\text{C}$
 - 30% .. 95% RH, in $15^{\circ}\text{C} \dots +80^{\circ}\text{C}$
- Measure:
 - Fatigue
 - ESC
 - Creep
 - ...



Impact testing

Instrument:

- Instron Impact Drop Tower System 9450
- With Large Base for product testing
- Gives high-resolution impact curve for advanced analysis of performance
- Many fixtures available
 - Irregular objects
 - Charpy
 - Izod
 - Films
 - ...

9450 with Large Base		
Energy range	J	0,59 - 757
	ft-lb	0,44 - 558
Impact velocity	m/s	0,77 - 4,65
	ft/s	2,53 - 15,3
Drop height	m	0,03 - 1,10
	in	1,18 - 43,3
Mass range ¹	kg	2,00 - 70,0
	lbs	4,41 - 154
Mass increments	kg	0,5
	lbs	1,1
Force transducers	kN	0,45 to 222
	lbs	101 to 50000
Machine dimensions (w x d x h)	mm	1520 x 940 x 2870
	in	60 x 37 x 113
With thermostatic chamber (w x d x h)	mm	-
Test area dimensions (w x d x h)	mm	1200 x 730 x 745
	in	47.2 x 28.7 x 29.3
With thermostatic chamber (w x d x h)	mm	-
Machine weight	kg	1125
	lbs	2480
With thermostatic chamber	kg	-
	lbs	-
Load on slab in static condition ²	kg/m ²	1200
	N/m ²	11772
Concentrated load on feet	kg/cm ²	3,4
	N/cm ²	33
Electrical supply	-	220-240V 50/60Hz
	-	100-120V 50/60Hz
Compressed air supply	bar	6 to 10
	psi	72,5



Data Acquisition Rate and Points:

65'536 points acquired up to 4 MHz, simultaneous on Strain Gauge, Piezoelectric, and Analog channels.



Impact testing Pendulum

Instruments:

- Zwick HIT5.5P
 - Up to 5.4 Joule, several pendulums available
 - Charpy
 - Izod
- Cometech Notch Cutter
 - Enables testing of reproducible Charpy & Izod notched impact testing





HDT & Vicat

Instrument:

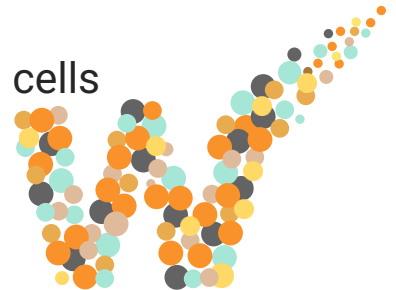
- Instron CEAST HV3S Thermo-Mechanical System
 - 20 – 300°C
- Measure:
 - HDT A, B & C
 - Vicat A & B



Weathering & aging

Instruments:

- Atlas Suntest XXL+ Weather Simulator
 - Xenon lamp weathering and lightfastness test chamber
 - *Sunlight*
 - *Temperature*
 - *Moisture*
 - 3000 cm² exposure area
 - Designed for 3-D specimens
 - Weather cycling
- Aralab FitoClima Chambers x2
 - -20°C to +180°C
 - 10 to 98% RH
 - Cycling possible
- Elastocon EB 20
 - Aging oven
 - 6 Individually controlled cells
 - +40°C to +200°C
 - Controlled air exchange



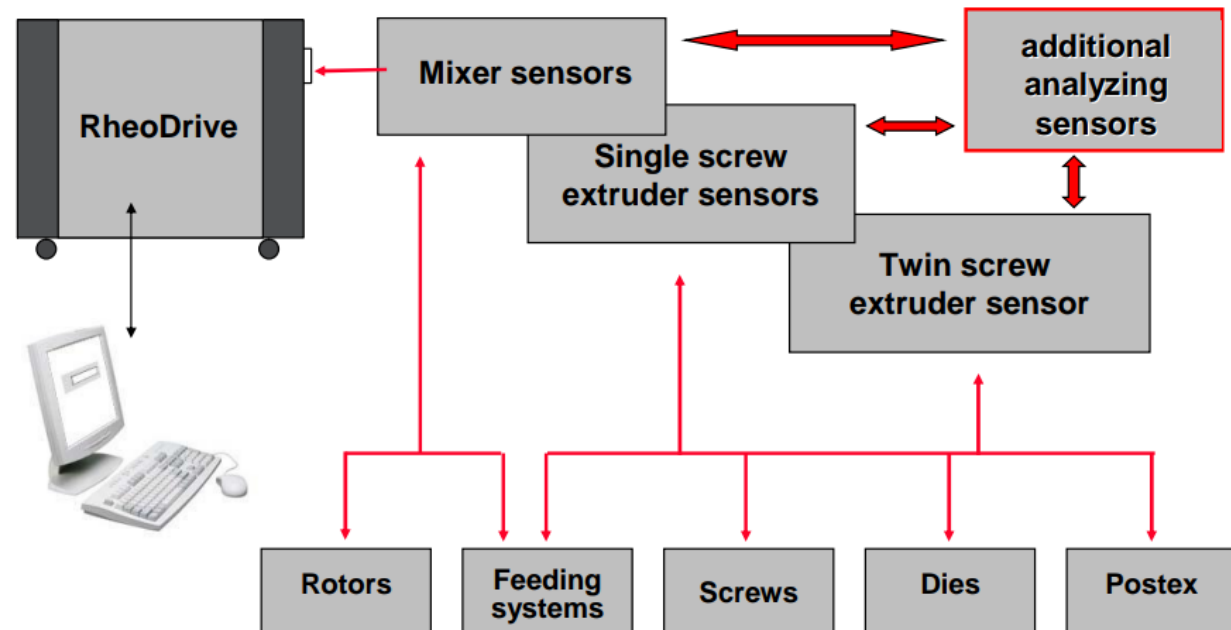
Lab Compounder & Mixer

Instruments:

- Thermo Scientific HAAKE PolyLab System
 - Twin-screw extruder Rheomex PTW16, capacity ~2kg/h
 - Rheomix batch-mixer
 - Dosing units
 - Pelletizer & water bath
 - Mini-jet injection moulder
 - ...



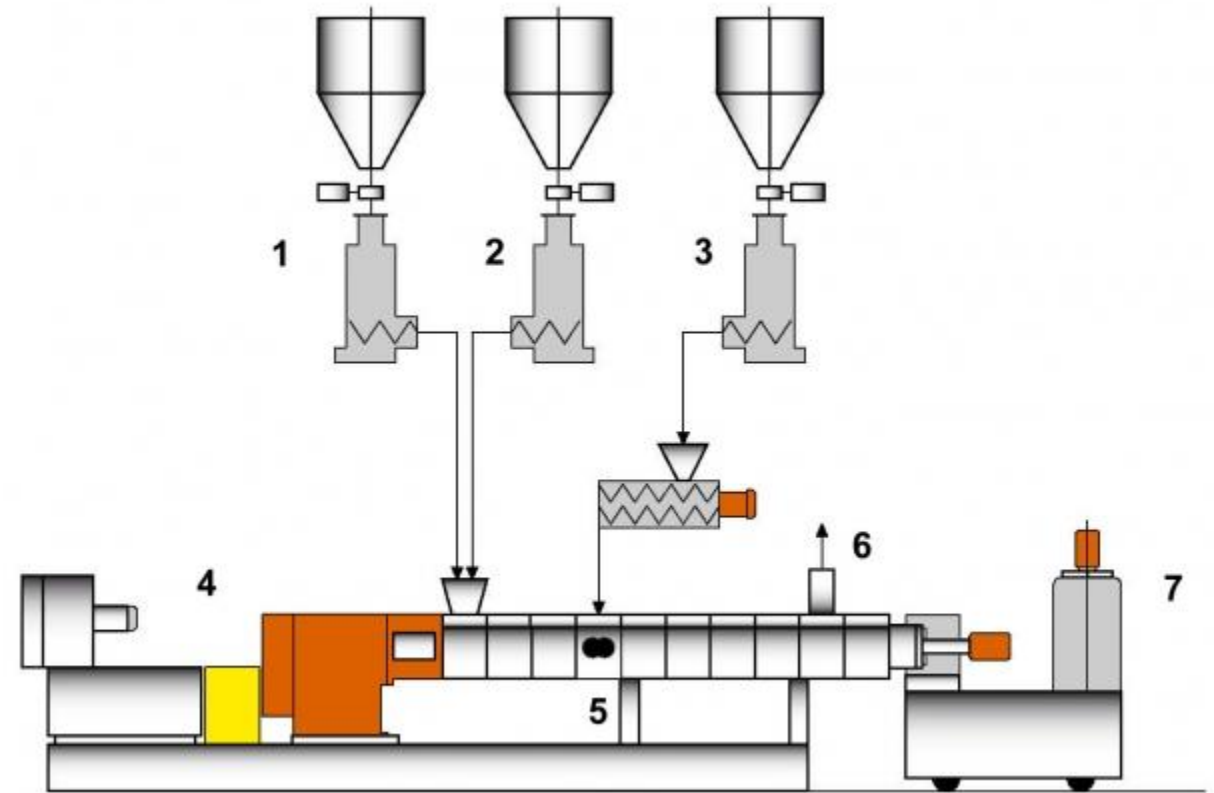
= **PolyLab OS**



Pilot Compounder

Instruments:

- ICMA Co-rotating twin screw extruder
 - Capacity ~50kg/h
 - Side feeder
 - 9 dosing units enabling advanced formulation work
 - Under-water pelletizing
- 2x 100L desiccant dryers
- Semi-automatic bagging station



Injection Moulding

Instruments:

- Production scale injection moulders
 - Engel Victory 120 ton
 - Engel Victory 160 ton
- Able to produce articles up to ~400g*
- Test moulds available
 - Universal test specimens “dog bones”
 - Flow spiral
 - Impact test specimens
 - Colour plates
 - ...



* depending on mould and projected area



Rheology

Instruments:

- Göttert Capillary Rheometer
 - High-pressure
 - Determine flow behaviour and viscosity of thermoplastics and rubber
 - Wide shear rate range
 - Modules for thermal conductivity, PVT, Die swell and more can be added
- Instron CEAST MF30
 - Measuring MFI/MVR
 - Variable weight



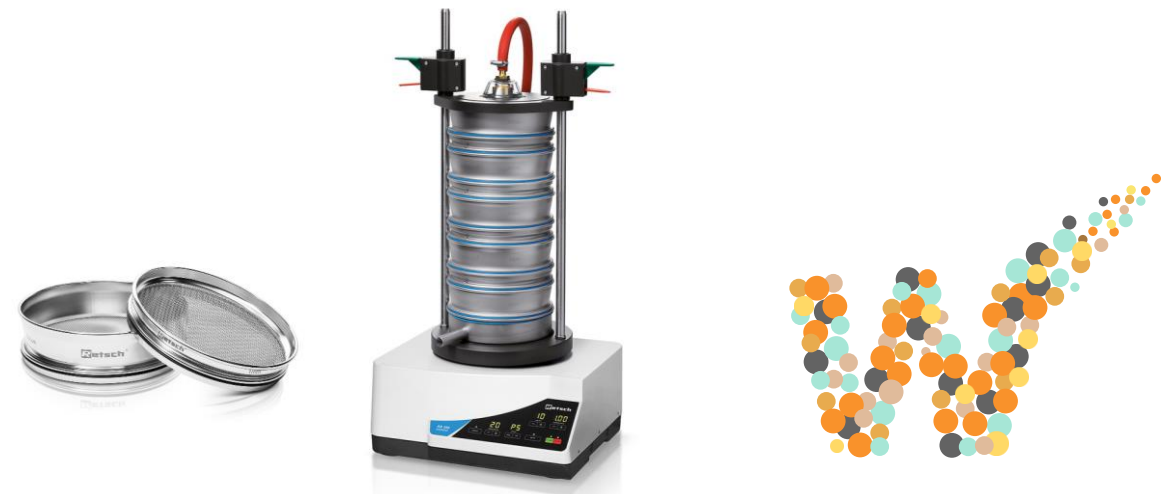
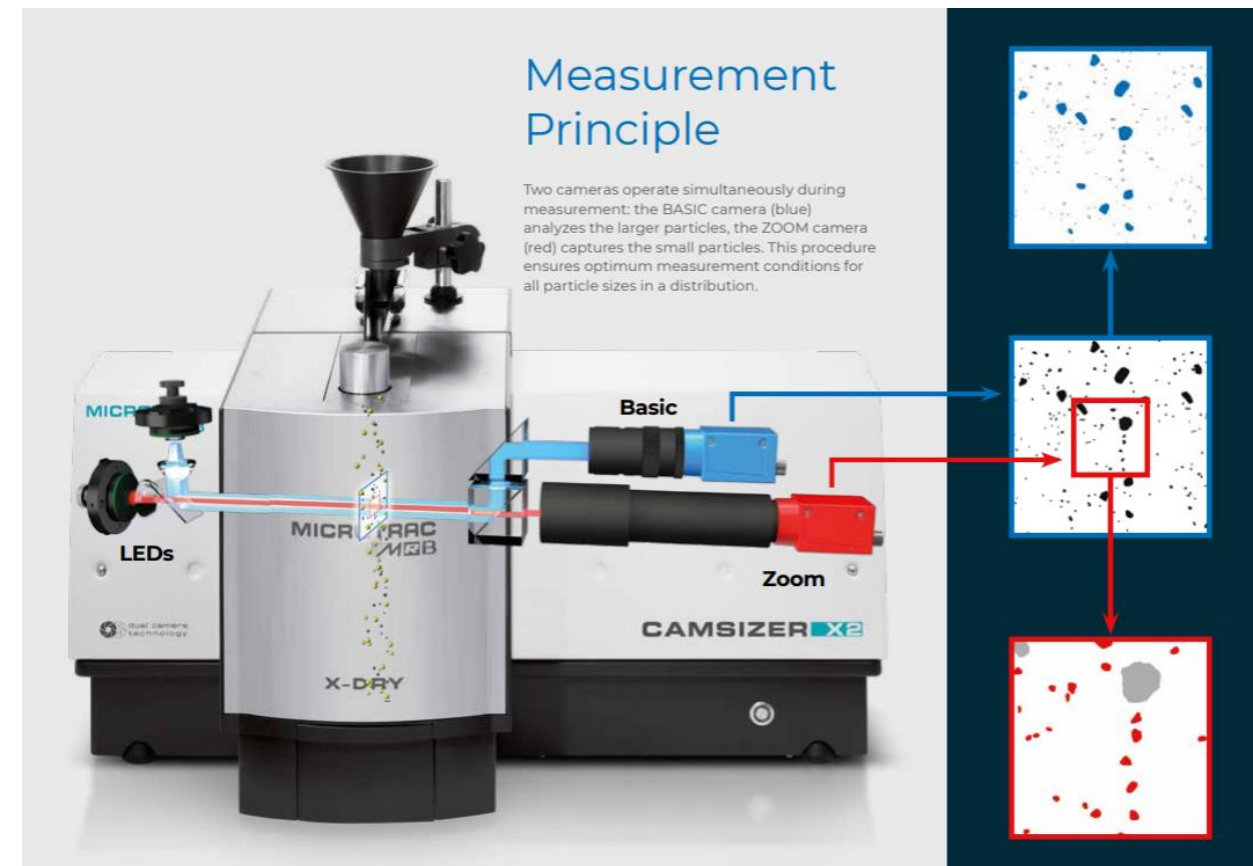
CEAST MF30



Fiber/particle analysis

Instruments:

- Camsizer X2
 - Flexible Size and Shape Analysis
 - High-resolution image analysis
 - Can measure particles in dry state (X-Jet) or in wet dispersion (X-Flow)
 - Individual particles can be assessed
- Retsch AS 200 Sieve Shaker
 - Suitable for dry and wet sieving
 - 3-D throwing motion



Scratch resistance & friction

Instrument:

- Erichsen Lineartester 249
 - Scratch hardness tester
 - 0.5 – 40 N
 - Variable test speed
 - Movement guide
- Cooper Friction skid tester
 - Assessment of surface friction & skid resistance properties





Moisture content

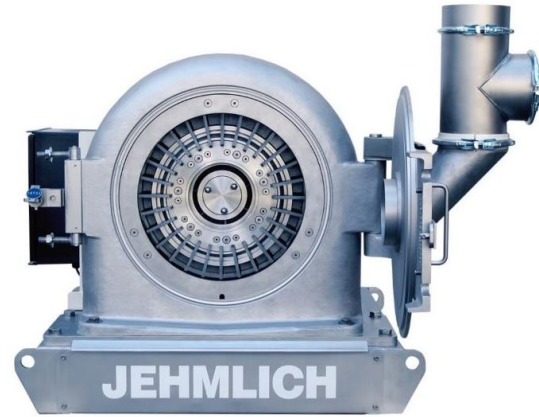
Instruments:

- Brabender Aquatrac
 - Highly specific residual moisture measurement
 - Reagents-free
 - Resolution of 1 ppm H₂O
- Moisture Analysers x4
 - Loss-in-weight scales



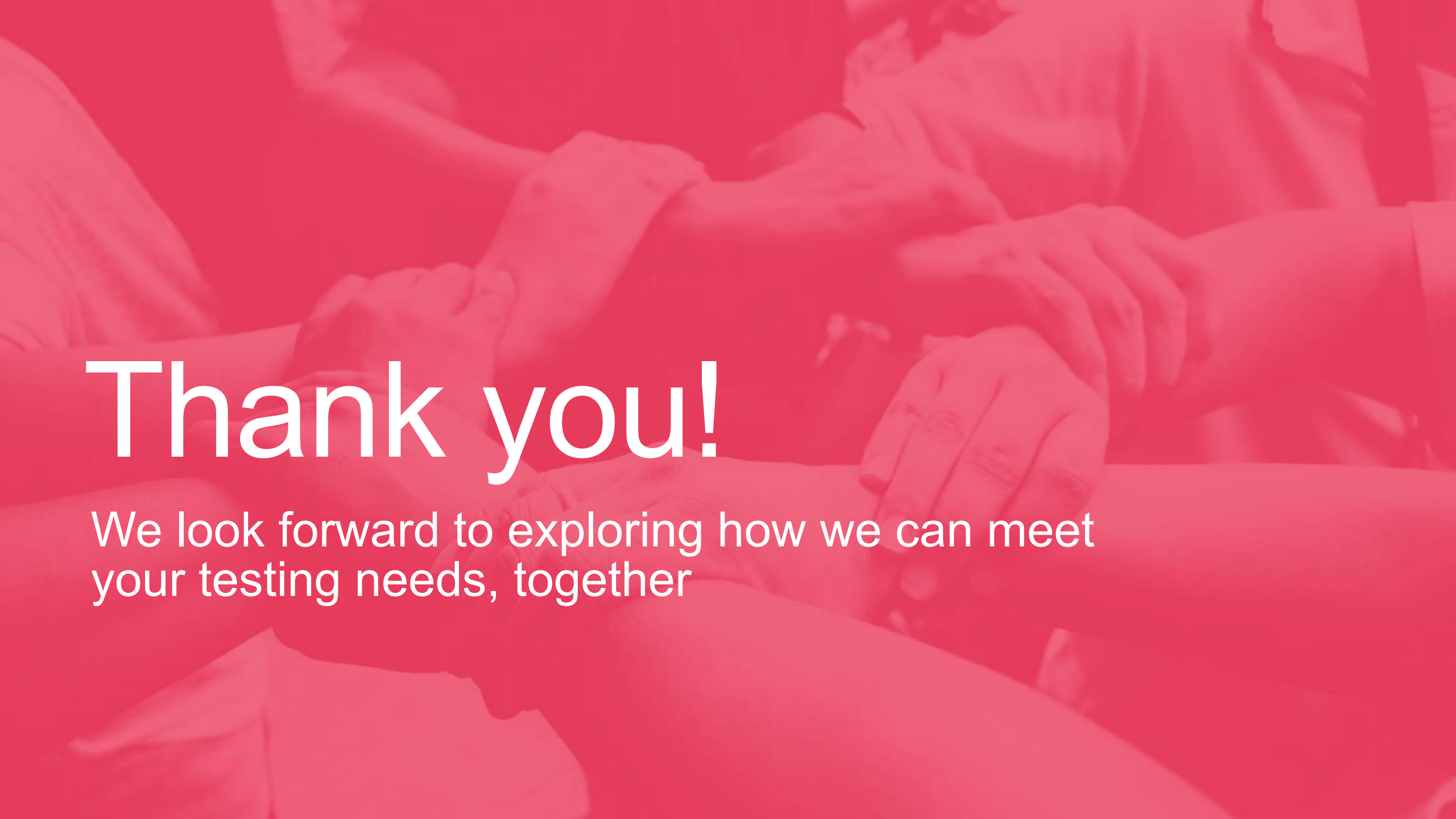
Other capabilities

- Chemical lab
- Laser cutter/engraver
- Variety of ovens
- Access to full paper lab
- 3D-printers
 - FDM
 - SLA
- Fiber flash tube dryer*
 - 300 kg/h
- Fiber compactor*
 - 350 kg/h
- Impact mill Jehmlich Rekord 212
- Colour & Gloss meters
- Optical microscopes with camera



* In need of some T.L.C. before use





Thank you!

We look forward to exploring how we can meet
your testing needs, together