



kollabtek

TAILORED ENGINEERING SERVICES

TRANSPORTATION + ENERGY TRANSITION



WHAT DRIVES US

Kollabtek is dedicated to fostering a more sustainable environment by driving advancements in **transportation and the energy transition**, actively striving to reduce our collective impact on the climate for generations to come.

True to its name, Kollabtek prioritizes synergy by collaborating closely with its partners and clients, driving greater technological innovations. Our commitment has created a framework rooted in flexibility and agility, which forms the cornerstone of our unique approach.



OUR HISTORY

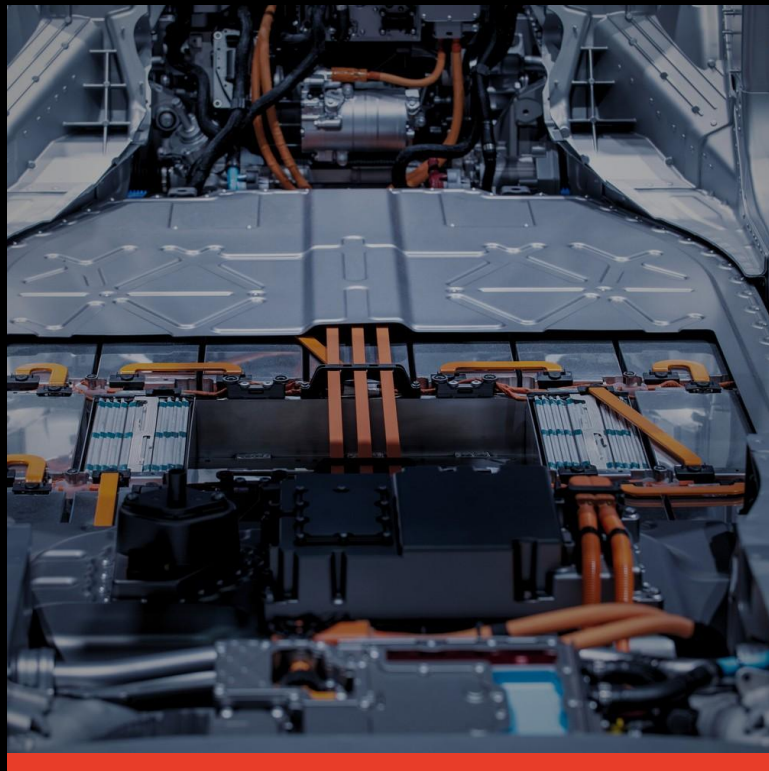


Founded in 2011, INGtech was established to catalyze progress toward a more environmentally conscious future. Over the years, INGtech's client-centered ethos and commitment to sustainable transportation have allowed it to expand its range of services. This growth has enabled INGtech to provide clients with comprehensive support, from vehicle design to fleet operations, across diverse industries, from electric motorcycles to electric trains.

In 2024, with the goal of enhancing our emphasis on delivering customized services to the transportation and energy transition sectors, INGtech's Engineering Division opted to establish itself as a separate entity, proudly embodying its distinct vision under the Kollabtek brand. With over a decade of providing industry-leading services as part of INGtech, Kollabtek stands tall on a foundation of expertise and pioneering spirit.

OUR MARKETS

Kollabtek's services extend across the complete product value chain, from assisting your suppliers to serving your customers.



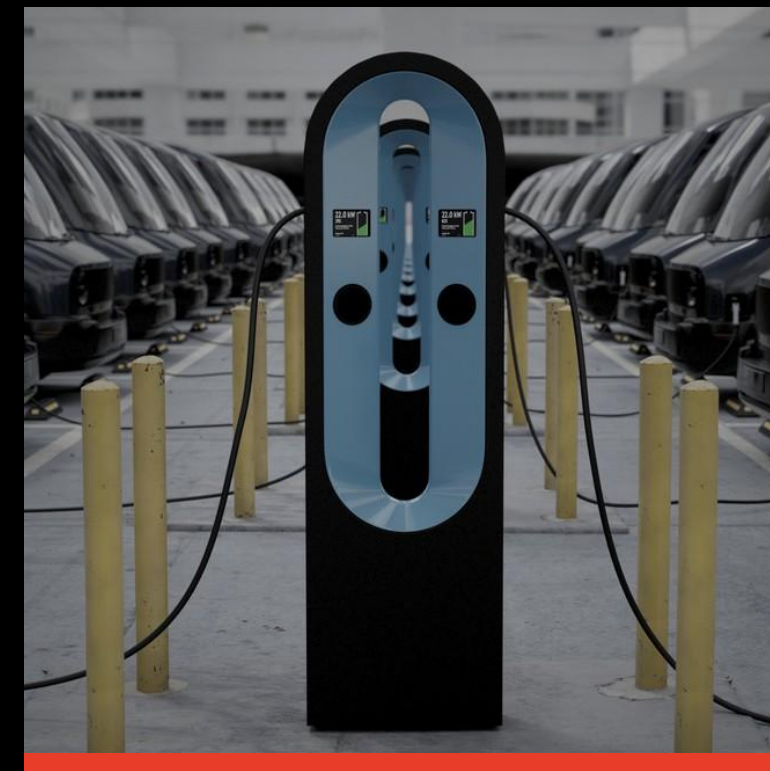
SYSTEM SUPPLIERS

Standard systems
Electric vehicle systems & APUs
Avionics Systems
Telemetry & connectivity solutions



VEHICLE OEMS

Automotive
Buses & coach
Trains & metro
Trucks & off-highway
Aerospace & defense
Light-duty & recreational



FLEETS

Public & mass transit
Charters & school bus
Specialty & off-highway
Local delivery & long haul
Airlines



INFRASTRUCTURE

Battery & Energy storage
Charging stations & V2G
Intelligent transportation systems

KOLLABTEK'S SERVICE OFFERING



Kollabtek is a leading consulting firm specializing in engineering solutions for the transportation and energy transition sectors. Backed by a team of experts, we tailor our services to empower organizations in successfully delivering projects, overcoming technical challenges, and driving continuous improvement initiatives.

From simple parts to complete vehicles and from inception to operation, Kollabtek specializes in providing end-to-end support throughout the entire product lifecycle. Whether it's providing punctual on-demand support, deploying a dedicated team, or delivering comprehensive turnkey solutions, our services are tailored to align with your specific needs.





OUR SERVICES

- ENGINEERING DESIGN
- PROTOTYPING & TESTING
- MANUFACTURING & PRODUCTION
- OPERATIONAL EFFICIENCY & RELIABILITY
- ENTERPRISE OPERATIONS MANAGEMENT



ENGINEERING DESIGN



> Mechanical, Electrical & Embedded Systems

- + Definition of requirements & constraints
- + Analytical & numerical modeling of systems
- + Detailed design, 3D modeling & integration
- + Power distribution, communications & controls
- + Interfaces, routing & engineering drawings

> Simulations

- + Static & dynamic Finite Element Analysis (FEA)
- + Fatigue analysis & Frequency Response Function (FRF)
- + Mass, sizing & performance optimization
- + Kinematics & loading analysis
- + Fluid dynamics & heat transfer

> Compliance & Safety

- + Design reviews & best practices
- + Regulations, industry standards & supplier compliance
- + Failure Mode Effects & Criticality Analysis (FMECA)
- + Drafting of operations & maintenance manuals
- + Improving reliability & performance issues

> Advanced Engineering

- + Technology watch & competitive benchmarking
- + Product review & optimization
- + Cost & return on investment analysis
- + Risk of adoption assessment
- + Mock-ups, trials & preliminary testing

Reducing Uncertainties

Our experts help bridge knowledge gaps and support your team in accelerating the design of your products.

Addressing External Factors

We proactively include customers and suppliers in the design process to maximize the viability of your product.

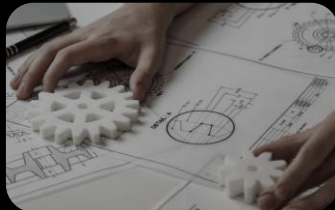
Doing Things Right (The First Time)

We take a lifecycle approach to design and make proactive decisions early on, reducing downstream risks.

WE CAN SUPPORT ALL STAGES OF YOUR PROJECTS

CONCEPT

Design
and
concept



Mesures



Scan 3D

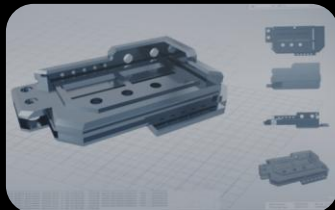


CAD Model



DESIGN

Mechanical
& Electrical
design



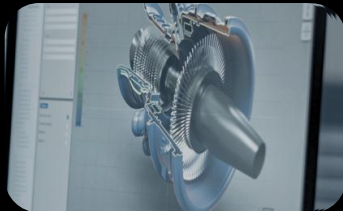
Reverse
Engineering



Integration

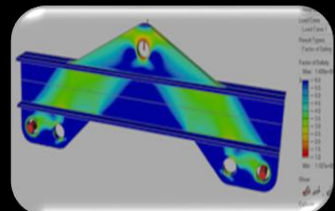


Systems
Dev./ R&D



SIMULATION

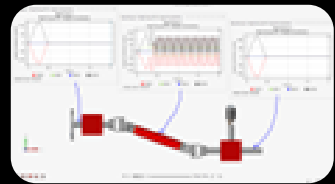
Constraint
Analysis
(FEA)



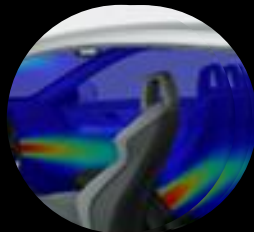
Optimization



Kinematic

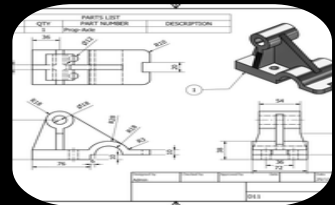


CFD

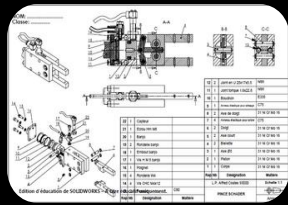


DRAWING

Detail
Drawing



Assembly
drawing



Instruction



Compliance
Report

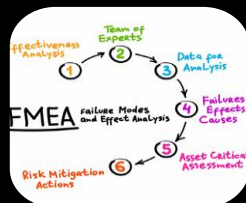


MANUFACTURING

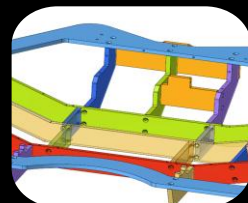
Manufacturing
Design Method



DFMEA



Tooling



Quality
Liaison
Agent



PROTOTYPING & TESTING



> Prototyping & Commissioning

- + Prototyping & commissioning management
- + System inspection & integration / functional testing
- + Troubleshooting & root cause analysis
- + Fine-tuning, modifications & improvements
- + Industrialization validation (method & cycle time)

> Instrumentation, Data & Optimization

- + Identification of relevant data & parameters
- + Selection of data acquisition (DAQ) system & sensors
- + Sensor calibration, installation & management
- + Test data sorting, analysis & reporting
- + Data-based simulation model validation & optimization

> Verification, Validation & Performance Testing

- + Test code drafting & test planning
- + Benchmarking, design target assessment & pre-trial testing
- + Bench, lab & environmental testing
- + Track testing & controlled field testing
- + Long-term reliability and durability testing

> Compliance & Certification Testing

- + Third-party qualification (contractual requirement)
- + System & complete architecture safety validation
- + Regulatory compliance testing & standards certification
- + Pre-series / production inspection & validation
- + Product application approval (PAA) validation

Streamlined Troubleshooting

Our years of experience in prototyping and testing help streamline solutions to relieve downtime and keep you moving forward.

Simplified Data

Whether it be selecting sensors, acquiring data, or analyzing data, our team can help guide you through the process or can provide a turnkey solution.

Accelerated Testing

Our knowledge of regulations and standards, as well as our existing test procedures, can facilitate and accelerate your testing needs.

MANUFACTURING & PRODUCTION



> Green Factory

- + Energy optimization & GHG emissions reduction
- + Mapping of inputs and outputs of finished goods
- + Production optimization & reduction of waste
- + Packaging & shipping improvements
- + Product end-of-life strategy

> Industrial Engineering

- + Optimization of production line layouts & workflow
- + Optimization of resource capacity, allocation & utilization
- + Identification of KPIs & implementation of monitoring tools
- + Process improvements, risk management & cost reductions
- + Change management & continuous improvement initiatives

> Manufacturing Engineering

- + Design for manufacturability review
- + Creation of assembly methods & instructions
- + Design of jigs, fixtures & tooling
- + Management of drawing revisions & BOM changes
- + Management of quality & reliability issues

> Data & Smart Factory

- + IoT solution (tag parts, equipment & end products)
- + Inventory & production scheduling optimization
- + Data acquisition of machinery performance
- + Implementation of automated reporting & dashboards
- + Monitoring systems for early detection of failure

Do More With Less

Optimize your operations and improve the efficiency of your processes to save on time and costs while also reducing waste and your carbon footprint.

Take Advantage Of Data

Leverage data to monitor production in real-time and keep track of finished goods. Set up alerts for early detection of failure and inventory deficiencies.

Greater Achievements Through Collaboration

Our team can help you streamline coordination with suppliers and explore collaborative opportunities with the industry to facilitate production and mitigate risks.

OPERATIONAL EFFICIENCY & RELIABILITY



> Reliability Engineering

- + Data acquisition & diagnostic code management
- + Inspection & onsite maintenance
- + Troubleshooting & system malfunction investigation
- + System firmware updates & non-regression testing
- + Implementation of performance & prognostic indicators

> Operational Efficiency

- + Data acquisition & efficiency assessment
- + Parasitic losses & energy management optimization
- + Reduction of aerodynamic drag & rolling resistance
- + Idle time optimization & implementation of speed limiters
- + Integration of auxiliary power units (APU)

> Fleet Electrification

- + Data acquisition & energy profiling
- + Electric / hybrid vehicle conversion study
- + Electric / hybrid vehicle financial evaluation
- + Electric / hybrid vehicle GHG reduction estimates
- + Recommendation & integration of EV technologies

> Training

- + Energy management & eco-driving
- + Fleet electrification & safety
- + Fleet management & telematic solutions
- + Fleet maintenance plans & solutions
- + Diagnostic & network communication tools

Deeper Understanding Of Operations

Take advantage of data acquisition and monitoring systems to gain insight into how to improve efficiency and address reliability issues.

Seize The Benefits Of EV Technology

Leveraging our expertise in electrification, our team can evaluate the suitability of EV systems for your fleet, uncover the cost-benefit and implement targeted solutions.

Small Changes, Large Gains

With a deep understanding of vehicles, from design to operations, we are in a unique position to provide training tailored to your needs, starting with what impacts your day-to-day reality most.

ENTERPRISE OPERATIONS MANAGEMENT



> Project, Operations & Client Management

- + Project, program & portfolio management
- + Operations management & process improvement
- + Key performance indicator (KPI) identification
- + Implementation of digital & automated solutions
- + Client & account management

> Bids & Sales Support

- + Technical support for drafting & analyzing RFPs
- + Customer feedback analysis & product improvements
- + Product adaptation requirements, risk & cost analysis
- + Amendment & derogation management
- + Documentation, reporting & proposal drafting

> Supply Chain & Quality Management

- + Supply chain mapping & audit
- + Supplier development & approval process
- + Evaluation & management of critical suppliers
- + Production part approval process (PPAP)
- + Procurement during supply issues & shortages

> Change Management

- + Analysis of opportunities, challenges & risks
- + Evaluation of stakeholders, impacts & obstacles
- + Recommendations & strategic planning
- + Training, implementation, monitoring & support
- + Resistance management & strategy adaptation

Streamlining Operations

Adopting management frameworks and automated tools can simplify operations and provide you with more time to focus on what matters most to your business.

Reducing Supply Chain Risk

Our team can map and audit your supply chain to uncover critical points, implement strategic changes and put processes in place to minimize disruptions.

Making Long-Lasting Changes

With an external perspective and a human-centered approach, we can help you identify opportunities for improvement, implement solutions and proactively mitigate resistance.

TOOLS & CAPACITIES

Our team is knowledgeable in a diversified set of instruments, equipment and software areas.

Instrumentation



- ✓ IMU and GPS
- ✓ Load and torque
- ✓ Stress and strain
- ✓ Velocity and acceleration
- ✓ Thermal and heat transfer
- ✓ Noise and acoustics
- ✓ EMC / EMI
- ✓ Imaging and photometry
- ✓ Hydraulic / pneumatic pressure and flow
- ✓ Vibration, shock and impact loading
- ✓ Current, voltage and electrical noise
- ✓ Angle, rotation and displacement
- ✓ Aerodynamics

Equipment



- ✓ Data acquisition systems
- ✓ CAN bus analyzers
- ✓ Telemetry systems
- ✓ Dynamometers
- ✓ Climatic chambers
- ✓ Test benches
- ✓ Shakers
- ✓ Scales
- ✓ Tilt tables
- ✓ Oscilloscopes
- ✓ Thermal cameras
- ✓ Sound cameras
- ✓ Brake meters
- ✓ Low and high voltage electrical testers

Software

Research & Data Management

DIAdem, MATLAB, Power BI, Python, TensorFlow, R

Simulation

HyperMesh, HyperWorks, Simulink, Adams, Ansys, NX Nastran

Instrumentation

DaQ, IPEmotion, Vector CANalyzer, telemetry

Mechanical Design & Modeling

CATIA, 3DS, PLM, SOLIDWORKS, AutoCAD, Inventor, Creo

Electrical & Network Architecture

SOLIDWORKS Electrical, CATIA Electrical, Arcadia Electrical, IQAN

Graphic Design

Adobe Animate, Adobe After Effects, Illustrator, CAD Rendering, Photoshop

01



Adaptable approach

We can integrate within your team to provide collocated support or we can independently develop solutions for you.

02



Adaptable timeframe

We accompany you within the reality of your timeline. We can support short-term mandates or provide support throughout an organization's long-term vision.

INTEGRATED COLLABORATION

e.g. staff augmentation

SHORT-TERM

e.g. crisis management

LONG-TERM

e.g. outsourcing

TURNKEY SOLUTIONS

e.g. complete development of custom components

Kollabtek's operational framework is founded on flexibility and agility. As a result, we favour tailoring our services to the reality and needs of our clients.

AGILE COLLABORATION

01



Dedicated & Targeted Support

Trying to innovate in an environment where individuals must manage ongoing projects and deal with impromptu situations can be complex and ineffective. Kollabtek can offer a team that is dedicated solely to our clients' key activities.

Kollabtek can provide support in an on-demand basis and only to strategic pain points. These pain points can be small and precise, or they can englobe larger aspects within the framework of product development.

02



Collaborative

End-user focus: our focus is on the voice of the customer, on the end-user experience as well as on the customer journey throughout the useful life of the product.

Client focus: we adapt to the needs of our clients and can provide either turnkey solutions or work closely with our clients to achieve the desired objectives.

Local support: we can provide our clients with collocated support on short notice to achieve the best outcome in a given situation.

03



Agile

Over the years, we have established a highly adaptable activity-based approach to accelerate product development and provide targeted support in strategic situations.

Workload Peaks

- Delivery of a client's order
- New product development (time-to-market)
- Weather / seasonal constraints for testing
- Crisis management or client support

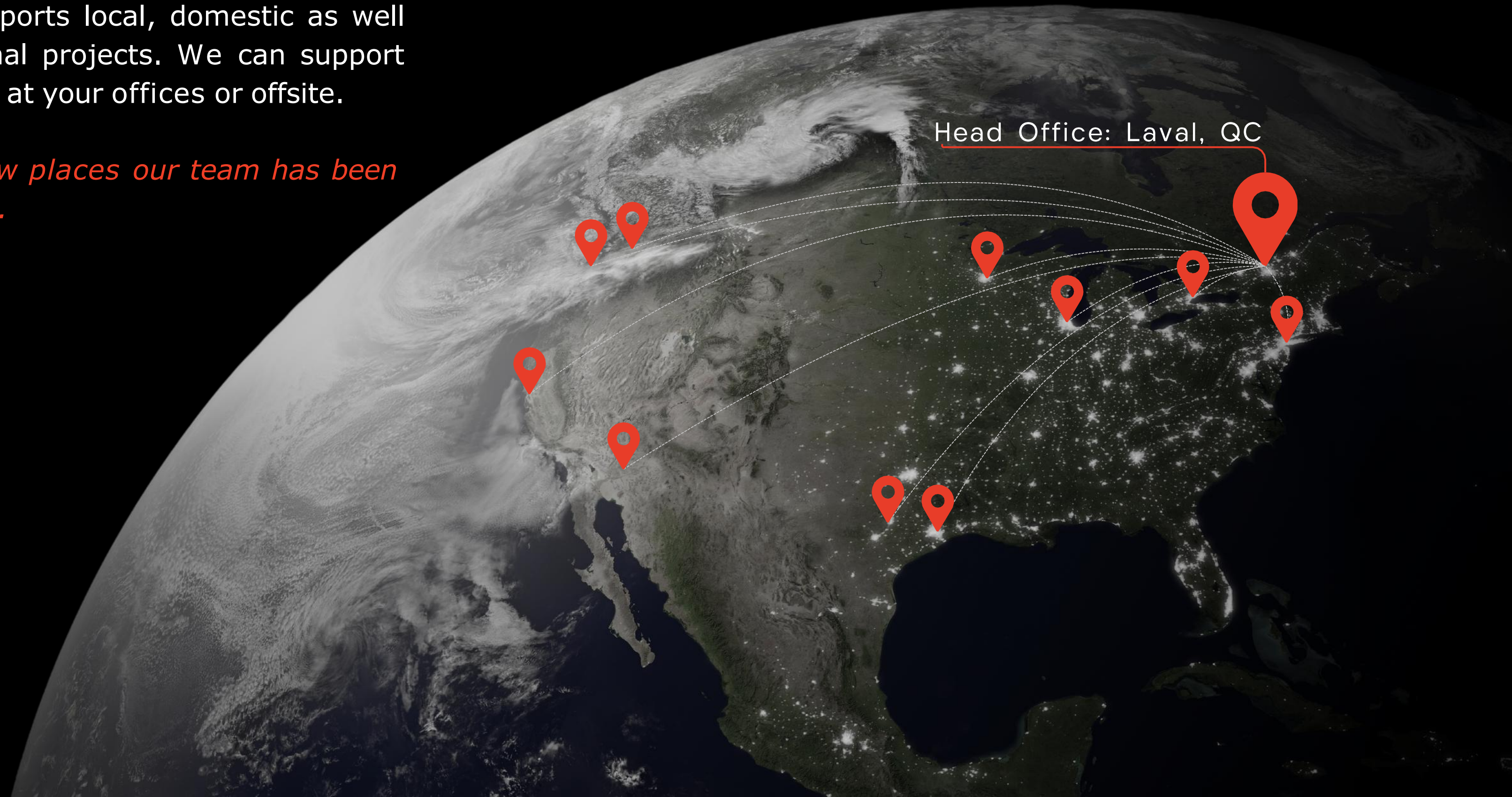
Resource Gaps

- Need for specialized expertise or equipment
- Internal resources temporarily unavailable
- Constraints limiting long-term assignments in remote locations / inability to obtain visas

INTERNATIONAL REACH

Kollabtek supports local, domestic as well as international projects. We can support you remotely, at your offices or offsite.

Here are a few places our team has been dispatched to.



Head Office: Laval, QC

OUR COLLABORATIONS OVER THE YEARS

Throughout the years, while providing services to our clients, we have had the privilege to work alongside and support a variety of notable organizations.

NOTABLE CENTERS, LABORATORIES & PROVING GROUNDS

- ✓ CRIQ
- ✓ Greening Inc.
- ✓ Elite Engineering
- ✓ PMG Technologies
- ✓ Element, Bodycote
- ✓ Micom Laboratories
- ✓ Ford Proving Ground
- ✓ Link Engineering Company
- ✓ TitanX Center of Excellence
- ✓ GM Desert Proving Ground
- ✓ UOIT – ACE Climatic Wind Tunnel
- ✓ Transportation Research Center (TRC)
- ✓ Centre de technologies avancées (CTA)
- ✓ Continental Tire Uvalde Proving Grounds
- ✓ National Research Council Canada (NRC)
- ✓ Calcoast Industrial Testing Laboratory (ITL)
- ✓ LTI Bus Research and Testing Center (Altoona)

NOTABLE SUPPLIERS

- ✓ ZF
- ✓ BAE
- ✓ Actia
- ✓ Carrier
- ✓ Sutrak
- ✓ Hubner
- ✓ Cummins
- ✓ Thermo King
- ✓ Dana TM4
- ✓ Bendix
- ✓ Lippert
- ✓ Modine
- ✓ Niehoff
- ✓ Ricardo
- ✓ Powerex
- ✓ Webasto
- ✓ Delco Remy
- ✓ Thermatech
- ✓ Vapor Rail, Wabtec
- ✓ Allison Transmission
- ✓ Mobile Climate Control
- ✓ Grayson Thermal Systems

NOTABLE CITIES & TRANSIT AUTHORITIES

- ✓ Ottawa-Gatineau (STO)
- ✓ Quebec (RTC)
- ✓ Toronto (TTC)
- ✓ Montreal (STM)
- ✓ New York (MTA)
- ✓ Chicago (CTA)
- ✓ Boston (MBTA)
- ✓ Calgary Transit
- ✓ Brampton Transit
- ✓ Houston (METRO)
- ✓ Victoria (BC Transit)
- ✓ Vancouver (TransLink)
- ✓ Philadelphia (SEPTA)
- ✓ San Francisco (SFMTA)
- ✓ Connecticut (CTtransit)
- ✓ Austin (CapMetro)

OUR CONTRIBUTION TOWARDS ELECTRIFICATION

Over the years, Kollabtek has supported numerous electric and hybrid vehicle projects for various industries.

LION ELECTRIC



NOVA BUS



NEW FLYER



EVLO



SINTRA



MELCCFP



TENAX INT.



AMBULANCES DEMERS



UMQ



ÉLECTROCAMION



FPINNOVATIONS



ALSTOM



LITO G.M.



LETENDA



SYSNERGIE



THEIR CONFIDENCE MAKES OUR SOLUTIONS POSSIBLE

The Kollabtek team has had the pleasure and opportunity to collaborate with a variety of manufacturers, suppliers, operators, cities and research centers.

Our portfolio of projects and achievements is available on request.

SOME OF OUR CLIENTS

WHAT SETS US APART

01

Support from Beginning to End

We can provide 360° of product lifecycle support from inception to operation.

Similarly, we can support you throughout the entire product value chain, from your suppliers to your customers.

02

Experience

With extensive testing experience supporting over 1000 projects, we can provide you with product development and systems engineering best practices based on real-world data.

03

Versatile Collaboration

Our team is active wherever you are. We can support you remotely, at your offices or even offsite.

With a vast network of suppliers, laboratories and proving grounds to collaborate with, our reach extends that much further.

04

Niche Services

With a commitment to the transportation and energy transition sectors, we've refined our skills to excel in our field.

Our dedication towards innovation has enabled us to become experts in modern vehicles, notably hybrid & electric vehicles.

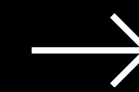
05

Complementary Teams

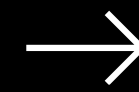
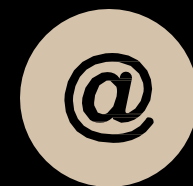
In collaboration with all our teams, we can provide end-to-end complementary services to meet all your product development needs from product roadmapping, to advanced simulations, to vehicle prognostics.

READY TO BRING
YOUR NEXT IDEA
TO LIFE?

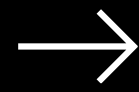
kollabtek



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**The details mentioned in this presentation include historical information from the time when Kollabtek's founding entity, INGtech's Engineering Division, was still part of INGtech Inc.*