Industrial polymer and plastics institute
We provide value to the polymer industry
Partner for the petrochemical industry

Our innovation centre provides services in polymer technology to the petrochemical and plastics, building on 30 years of experience

Tine Rørvik, CEO
Projects

Product development and improvement
Polymerisation trials with application testing
Product mix optimisation and sourcing
Additive qualification and specification
Additive sourcing and selection
Catalyst synthesis and qualification
Material selection and verification
Claim and failure investigations
Durability and life time testing
Tailor made seminars and training

Facilities

Polymerisation reactors
Catalyst synthesis laboratory
Plastics processing centre and compounding
Polymer and plastics test centre
Chemical and polymer analytics
Additive performance test centre

Innovation

Project management
International network
Innovative materials
IPR & FTO studies
Patenting for clients
With our industrial background and more than 140 patents for our clients, we understand the needs from the industry.

Morten Lundquist, Research Director
Projects

Catalyst synthesis and heterogenisation
Polymerisation and catalyst performance
Up scaling to industrial processes
Plastics material development and research
Product performance improvements
Additive optimisation and harmonisation
Product life time investigation and prediction
Novel polymers and new processes
Material recipe development
Plastics compounding and processing trials

Facilities

3 EX-proof advanced reactor rooms
0,1 - 20l advanced steel HP reactors
Inert handling and glove boxes
Small and full scale processing lines
Compounding lines
Additive performance centre

Support

Analytical laboratory
Structure/properties expertise
Benchmarking against market leaders
Performance and durability testing
FTO Studies
Norner takes an active role in developing more durable plastic solutions.

Henning Baann, Manager Scientific Laboratories
Projects

Performance testing of plastics
Advice and benchmarking of materials
Verification and consistency of properties
Ageing tests at high pressure and temperature
Maintenance support in material state and failure
Developing appropriate product specifications
Inspection plans for plastic parts and systems
Product durability at extreme conditions
Extraction behaviour of materials
Quality review and supplier audits
Third party investigations

Facilities

Autoclave testing laboratory
Material performance laboratories
Testing at various climate conditions
Advanced microscopy laboratory
Durability and NORSOK test centre
Fire testing laboratory

Competence

Plastics technology
Material performance
Material failure investigation
Partnership with Exova
ISO 9001:2008
Novel plastics from CO$_2$

Novel polymers made from CO$_2$ are developed by Norner with the goal to be suitable for standard thermoplastic processing applications.

Polypropylenecarbonate (PPC) is a copolymer of CO$_2$ and propylene oxide containing 40 wt% CO$_2$. In order to be used in extrusion or moulding the polymer need a high molecular weight.

Benefits

Improved eco-footprint
Efficient catalyst mapping
Tailored polymer properties
PPC polymer for extrusion
Prepare for scale-up
Reduce production cost

Ageing in extracting media

Life time analyses of plastics is normally done by accelerated ageing and testing the decay of physical performance, but the additive extraction is often forgotten.

Norner additives and durability test centre can simulate the realistic life time of a product by standard exposure methods as well as investigating additive extraction by various media.

Benefits

Precise lifetime prediction
Selection of additives
Develop appropriate recipes
Qualification to purpose
First time right
Reduced costs
Map critical performance

Polymers that are produced in our industrial bench scale are analysed and application tested in order to map the inherent capabilities of catalysts.

This example shows the effect of comonomer incorporation by two different PE Ziegler catalysts in bimodal operation and its effect on Dart Drop Impact of film.

Benefits

Application know-how
Structure/property relationship
Increase probability of success
Select catalyst for scale-up
Faster time to market
Reduced costs

Polymer gels

Polymer gels are a general challenge in thermoplastics. One cause of gels is related to the catalyst performance in the polymerisation process.

Norner has expertise and methods to characterise the potential for gel formation from different catalysts, analyse polymer gels and do root cause analysis of gel problems.

Benefits

Increase probability of success
Rapid troubleshooting
Screening of catalysts
Investigate process variations
Reduce number of plant trials
Higher speed
Reduced costs
Additives performance testing and qualification

We support the chemical industry and polyolefin producers to improve their profit.

Svein H. Jamtvedt, Principal Researcher Additives
Projects

Supplier qualification and specification
Benchmarking and cost optimisation
Optimisation of additive packages
Verification against customer specification
Additive sourcing and simplification
Life time prediction and verification
Product and failure investigations
Additive identification and quantification
High purity and low migration materials
Legislation; REACH, food and medical

Facilities

Polymerisation and catalyst laboratory
Small and full scale plastics processing
Ageing and durability test centre
Material and analytical test centre
Chemical and polymer analysis
Compounding centre

Competence

30 years industrial experience
International network
Advanced laboratories
Value chain knowledge
Providing value to the industry
Norner is an international and industrial institute with core competence in the plastics technology and value chain. Norner has leading expertise and advanced facilities to support the needs for product innovations. We support our customers in product developments, quality improvements, problem solving and failure analysis, product testing and certification as well as material recipe development and selection.

Our key focus segments are: **Polymers, Additives, Oil&Gas, Consumables and Infrastructure**