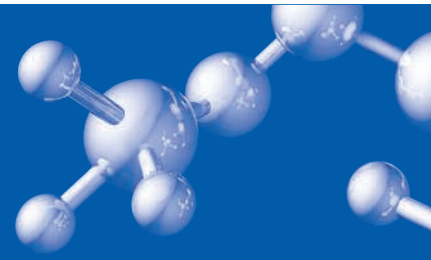


Zimmer® Polymer Technology

# Polyamide Industrial Yarn



## Introduction

For the production of polyamide 6 (PA 6) industrial yarn, Zimmer® polymer technologies offer different process routes from monomers to the required grade for all applications.

### Typical final products

- Super high tenacity tire yarn and dipped tire cord fabric
- Conveyor belt yarn and dipped fabric
- Fishing-net yarn
- Belt and rope yarn
- Parachute belt yarn
- Oxford yarn

## Multistage Evaporation

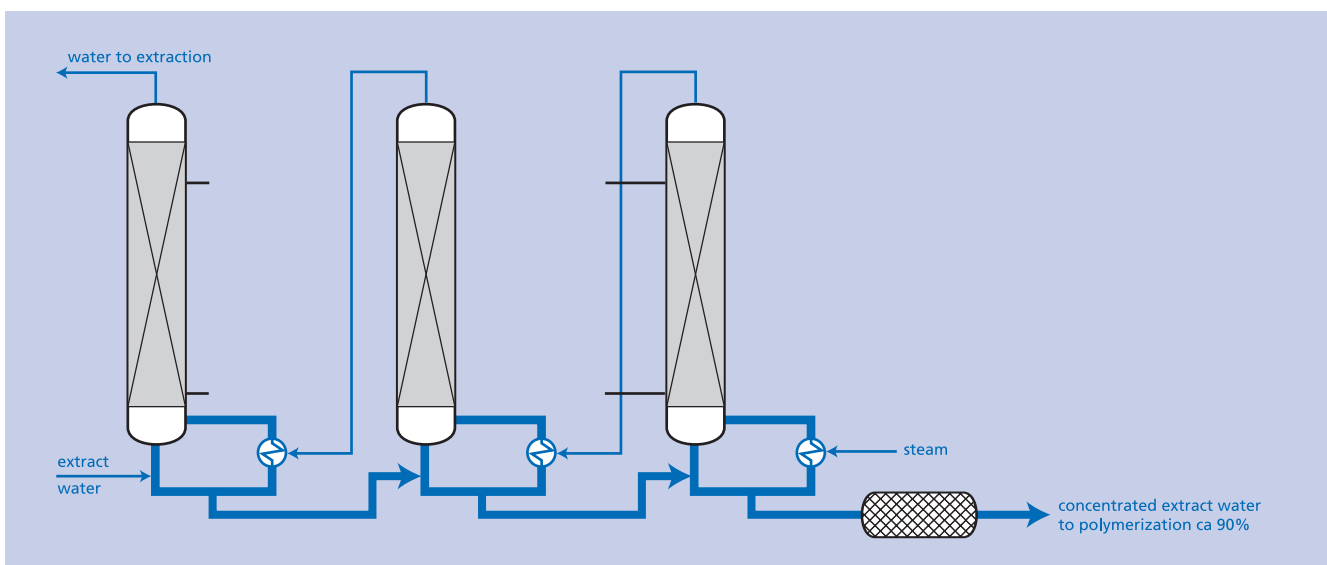
Advanced production concepts for selected product chain:  
offering enhanced product quality and production efficiency

### Recovery

- Selection of appropriate process
- Technical features in
  - Evaporation (see picture)
  - Solid waste preparation
  - De-polymerization
  - Chemical treatment
  - Distillation / melt crystallization

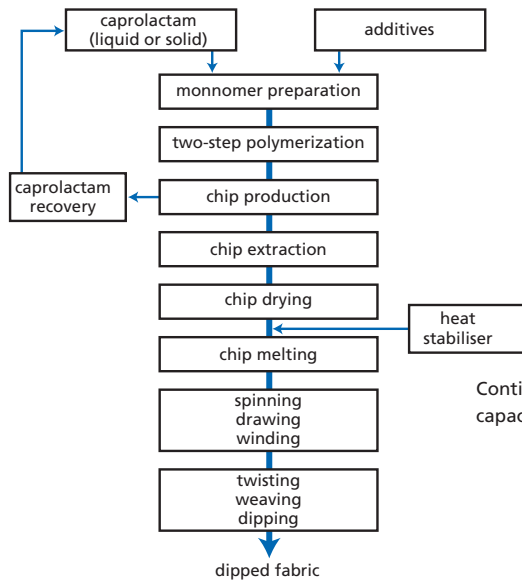
### Advantages

- Proven process technologies for all recovery applications
- Reliable continuous processes offer high caprolactam quality
- High quality recovered caprolactam allows the production of high quality PA 6, no need to produce 2nd grade by-product
- As caprolactam prices are high rise the value of the recovery system increases



## Continuous PA 6 technology

capacity: 20 – 300 tons/day

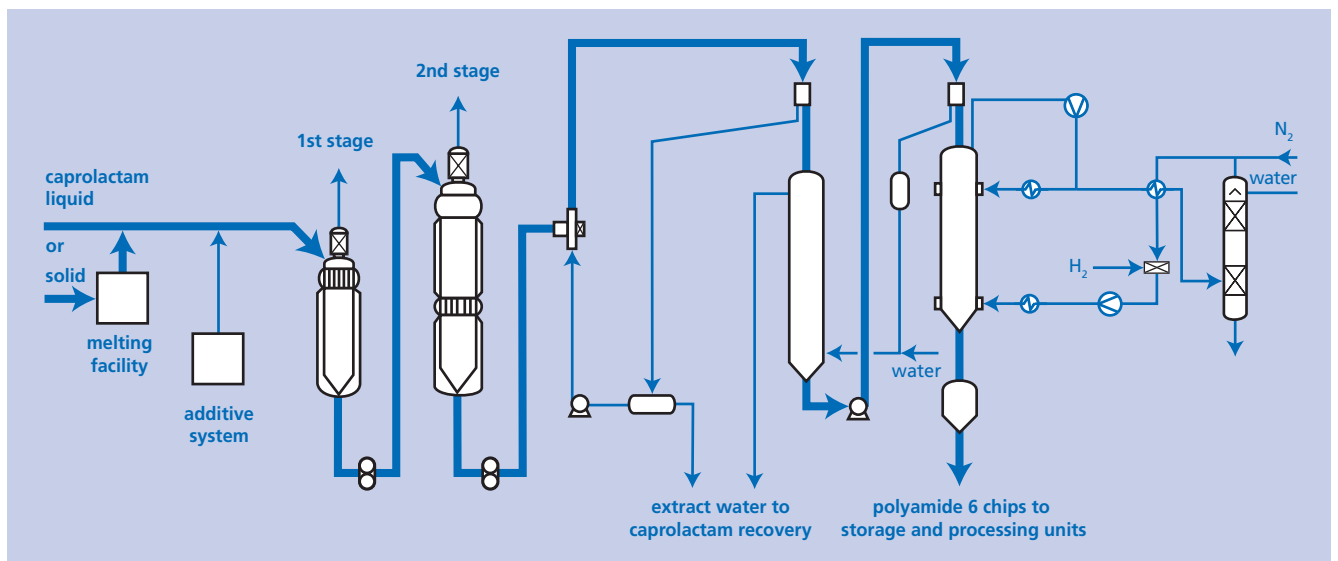


Continuous PA 6 technology –  
capacity 20–300 tons/day

## Polyamide 6 polymerization technology

### Key features

- Polymerization stages with optimum residence time profile by specially designed flow rectifier
- Chip extraction with counterflow of hot water allows a high chip-water ratio saving energy in the caprolactam recovery plant
- A closed loop nitrogen system for chip drying with specially designed two zone gas distributor results in uniform water content at low energy cost
- A uniform high quality polymer is produced in large scale production units up to 300 tons/day
- Additives are available for polymer quality improvements



Polyamide 6 continuous polymerization two-stage technology



PA6 Industrial Yarn Application  
Aircraft tire



### Comprehensive services

Lurgi offers support and services through the complete plant life cycle. In the preinvestment phase feasibility studies are prepared, financial engineering support given and pre-marketing events and raw material supply contracts conducted. During plant realization engineering, project management, supervision, commissioning and training services are offered. Sophisticated plant features are guaranteed.

After starting production, Lurgi provides the clients with further assistance and many other specific services such as preventive maintenance or revamping. The new production management system links data through the whole external supply chain (monomer supplier to car manufacturer) and also data of different internal management systems. This system reduces transaction costs drastically and improves the planning quality.

## Highlights

- Advanced integrated processes with own know how based on comprehensive production experience and on-going intensive research and development.
- Technological leadership in polyester processes based on more than 50 years experience.
- Investment projects can cover the full range from engineering/procurement (EP) to lump-sum turn-key of the polymerization.
- Complete production units offering competitive advantages starting from the monomers up to the final polymer chips using the advanced proprietary design.
- Proprietary design for key equipment in combination with the best quality components from the most reliable and world leading companies. Together with machinery manufacturers every production step is optimized through integration and fine tuning.

Lurgi is a leading technology company operating worldwide in the fields of process engineering and plant contracting. Based on syngas, hydrogen production and clean conversion technologies for fuels or chemicals Lurgi offers innovative solutions that allow the operation of environmentally compatible plants with clean and energy-efficient production processes.

Its technological leadership is based on proprietary and exclusively licensed technologies which aim to convert all carbon energy resources (oil, coal, natural gas, biomass, etc.) in clean products.

Lurgi is a member of the Air Liquide Group

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