



Your Expert in Fiber Processing

DIENES Lab Line for Wet Spinning

The Lab Lines are solution spinning laboratory lines especially designed for research, development and textile institutes and are suitable for instance for PAN, PEG, PVA . An Aramid process was already realized in a special design of the lab line.

This affordably priced compact line finds its principal application in the development and research of small amounts of polymer. The modular design and the local control allow to take specific customer requirements into account. Researcher can easily attach or exchange modules at any time to achieve fast research results. Furthermore, it is possible to integrate the modules to other manufacturer lines.

The standard DIENES lab line consists of the following modules:

- Spinning unit with dope supply & coagulation bath
- Washing & drawing unit (with baths or as a duo) incl. drying section
- Quintet
- Dancer arm cross winder



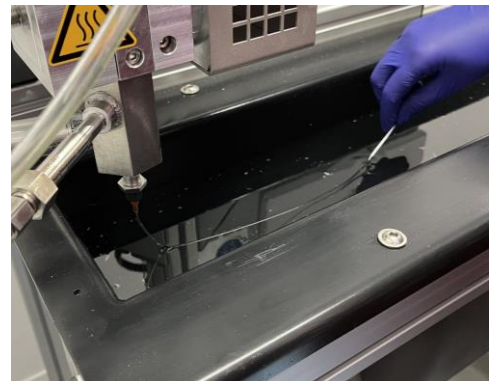
Spinning unit with dope supply & coagulation bath

The coagulation bath is designed for the use of small quantities of polymer. With a piping of stainless steel, a small dead space and a spin pump throughput of 48 cm³/min many combinations of polymer/solvent can be used for this wet spinning process. Different viscosity ranges are possible (0,25 – 50 Pa s or 50 – 500 Pa s or up to 2000 Pa s).

Furthermore, a simple conversion to air-gap spinning configuration including height adjustment is possible.

Completed by a thermal conditioning circuit this unit is a perfect initial point to convert polymer into fiber.

- Heated spinning tank ($V_{\max} = 1$ to 2 liters)
- Coagulation bath of 40 liters with thermal insulation and cover
- Stainless steel piping
- For air-gap and wet-spinning
- Gear spin pump
- Thermal conditioning circuit (room temperature - 65 °C)
- Modular design for simple integration in existing lab scale line



Washing & drawing unit incl. drying section

Starting from the standard execution the wash and draw module include three wash zones with four drive units for setting up a defined draw ratio in every section. Additionally, a drying unit is attached to the outlet of the last draw zone. The modular design allows to configure the machine setup to the customers needs.

- 3 pcs. wash-draw-zones
- Electrical heated wash baths up to 80°C
- Possibility for wash bath circulation
- Speed: 1 - 50 m/min
- Including piping for vapor extraction
- Drying section 2,8 m length, up to 200°C
- Modular design for simple integration in existing lab scale line



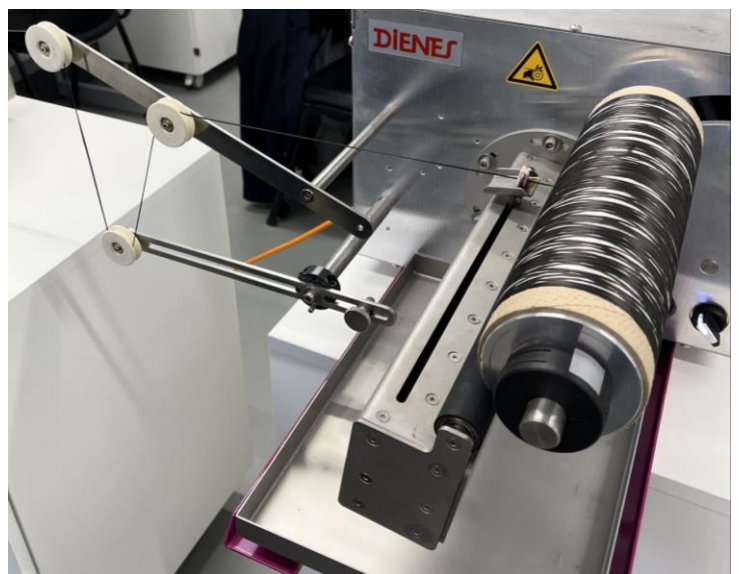
Quintet

- Speed: 1-50 m/min
- 5 rolls 40x30mm
- Shell Material: PEEK or stainless steel with ceramic coating or tbd.
- Modular design for simple integration in existing lab scale line
- 400mm / 300mm / 320mm (L/W/H)



Dancer arm cross winder

- Speed: 1-55 m/min
- Tube size: Ø 88mm x 290mm
- Tension control via dancer arm
- Modular design for simple integration in existing lab scale line
- 650mm / 700mm / 320mm (L/W/H)



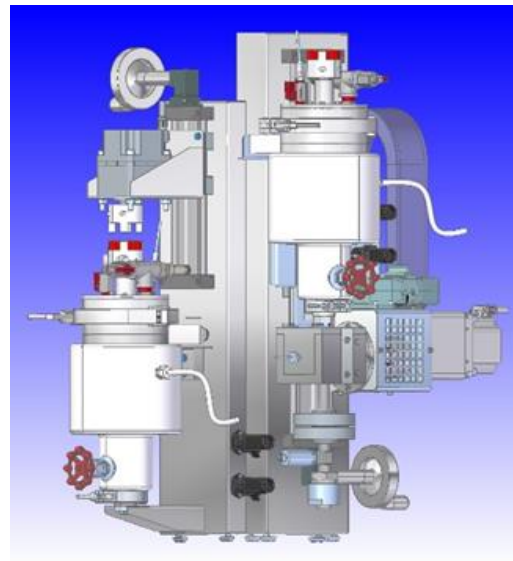
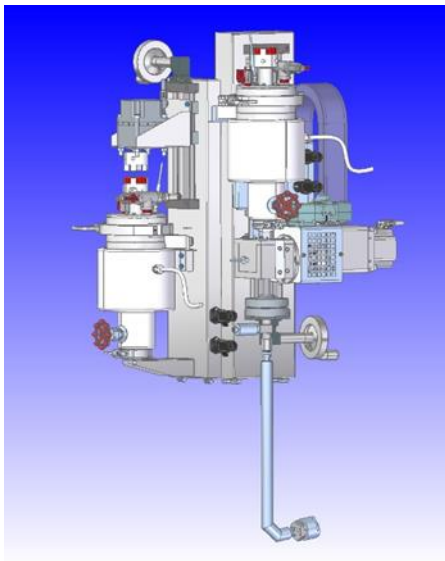
MULTIMODE® LAB

The Lab Line is being further developed and is available as MultiMode® LAB too.

The Spinning Unit of the MultiMode® LAB includes two dope vessels for a more comfortable operation: one vessel can be used for spinning while the other one is in stand-by being stirred and degassed.

This line can be delivered with one spinning pump specially designed for high viscosity (up to 3,000 Pa·s) or with two spinning pumps with different work ranges in viscosity for more flexibility (0,25 – 50 & 50 – 500 Pas) Each pump has a speed-controlled motor.

For Lyocell or similar highly viscous dopes we have introduced enhancements to the line like a heating along the spinning pipe, higher grade stainless steel in the spinning line and coagulation bath and higher temperature heating jackets for the dope vessel(s).



3D sketch of the spinning unit, left-side with the spinning pipe for immersed spinning, right-side with the adapter air-gap spinning.

Instead of the compact washing & drawing unit, the MultiMode® LAB is equipped with :

- 2 Washing Duos and 1 Drawing Bath in between for a better wash and draw performance

All required parts for operating the line are mounted in a MM Central Cabinet.

- Industrial PC and Touch Screen: MultiMode® Explorer (MME):
Process value input and visualisation system
- Connection to all modules



*MultiMode®
Explorer*

Further options are available:

- Dope preparation: Twin Shaft Kneader-Reactor Lab Unit
- Possibility for remote control per VPN



*Twin Shaft Kneader-
Reactor Lab Unit*