PANELBOARD

ANDRITZ PLUG SCREW FEEDER PROGRESS

REDUCE ENERGY DEMAND, IMPROVE PLANT EFFICIENCY AND INCREASE THROUGHPUT SUSTAINABLY

SUSTAINABLE SOLUTIONS & PRODUCTS

ANDRITZ

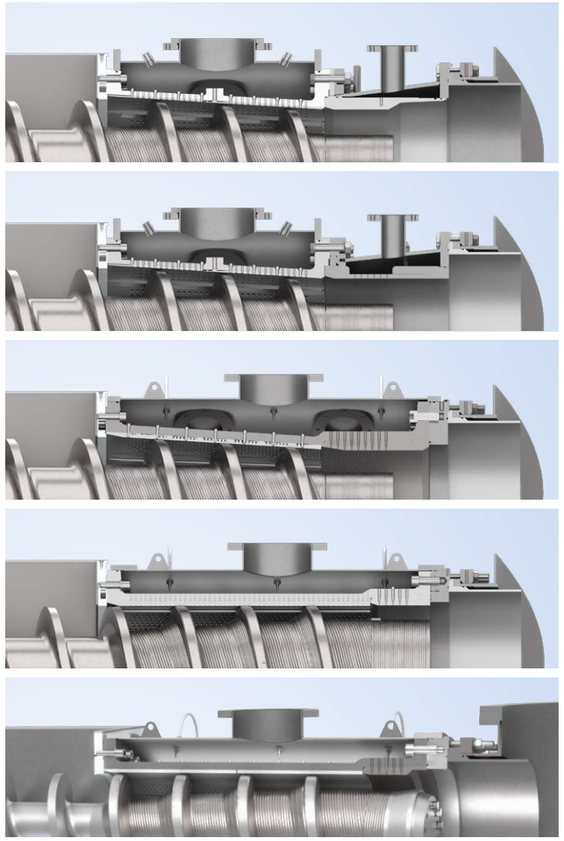
ENGINEERED SUCCESS

Many solutions for thermal energy (e.g. natural gas) savings and increased production throughput and efficiency

Due to increasing demands for always higher plant efficiency and production levels at MDF plants, new state-of-the-art solutions are constantly needed. For that reason ANDRITZ has developed through the years innovative solutions with a real "Plug Screw Feeder Progress". These are sustainable energy saving solutions*, customized to meet plant needs, to increase the squeezed water at the plug screw feeder and to increase production throughput and efficiency.

* Sustainable solutions and products help to protect the environment, contribute towards decarbonization or carbon neutrality, reduce the use of valuable resources such as water or recycle these resources, e.g. in wastewater treatment plants, or help to maintain biodiversity. This range of products also includes sustainable solutions that contribute towards a circular economy or reuse of side-stream resources.

Plug Screw Feeder Progress



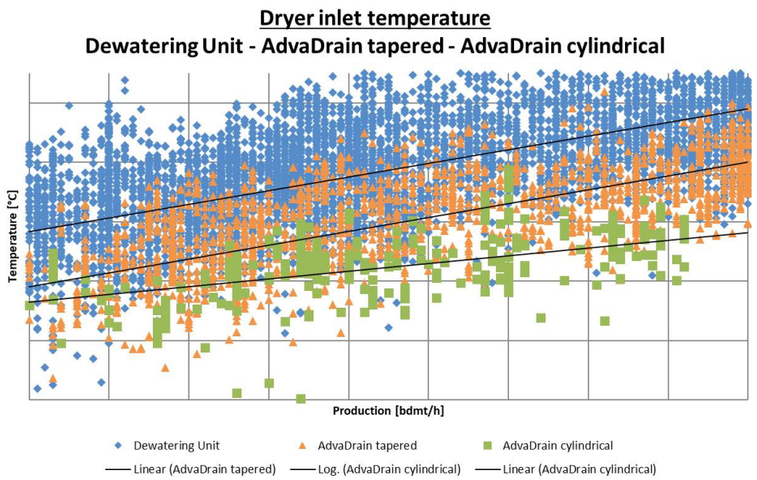
1. STANDARD PSF (SINCE 1967)
- No post dewatering

2. DEWATERING UNIT (SINCE 2006)
- Post dewatering in spool

3. APS MULTIPLE – DEWATERING CONICAL (SINCE 2014)
- Extended dewatering zone before spool

4. APS MULTIPLE – DEWATERING CYLINDRICAL (SINCE 2017)
- Maximized extension of dewatering surface

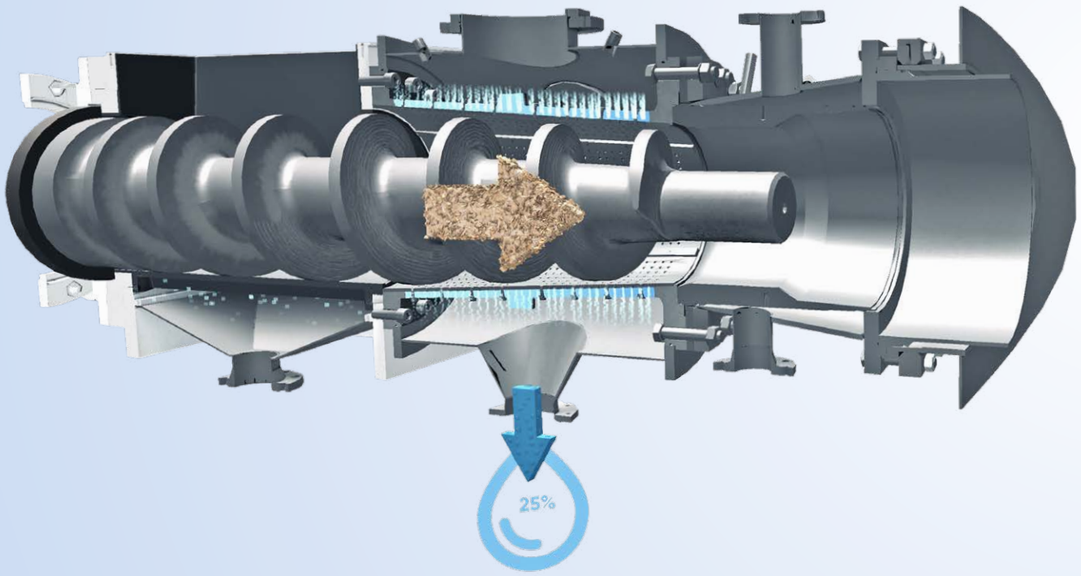
5. ADJUSTABLE PSF (SINCE 2021)
- Adjustable to maximized dewatering



Standard Plug Screw Feeder

1967 · 2006 · 2014 · 2017 · 2021

FEATURES
- No post-dewatering in spool

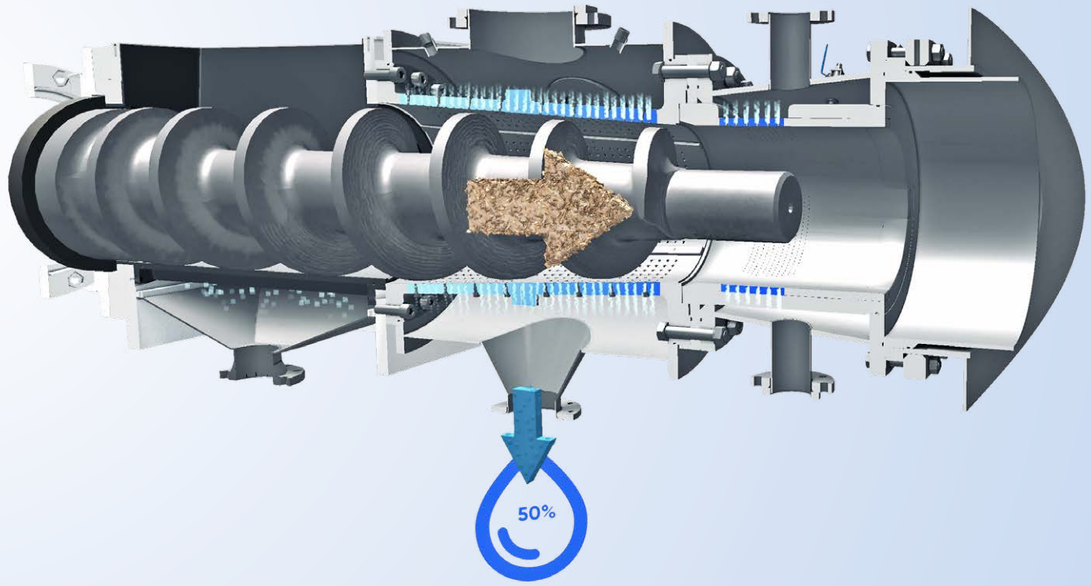


Motor power	**60%**	0% 100%
Dewatering efficiency	**25%**	0% 100%
Dryer inlet temperature	**190°C**	100°C 200°C

Dewatering Unit

1967 · 2006 · 2014 · 2017 · 2021

FEATURES
- Post-dewatering in spool
- Limited dewatering surface in spool
- Wasted zone before spool



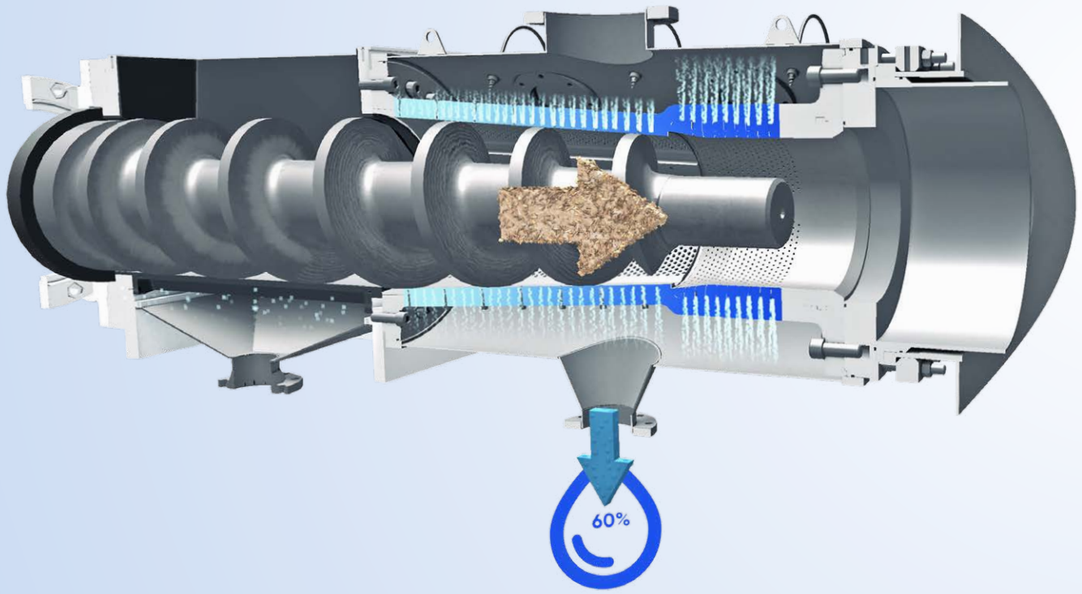
Motor power	**60%**	0% 100%
Dewatering efficiency	**50%**	0% 100%
Dryer inlet temperature	**165°C**	100°C 200°C

APS* Multiple – Dewatering conical

1967 · 2006 · **2014** · 2017 · 2021

FEATURES
- Improved post-dewatering in spool
- Improved dewatering surface in spool
- Extended dewatering zon before spool

ADDITIONAL ADVANTAGES
- Flexible process requirements due to AdvaProtect liner solution

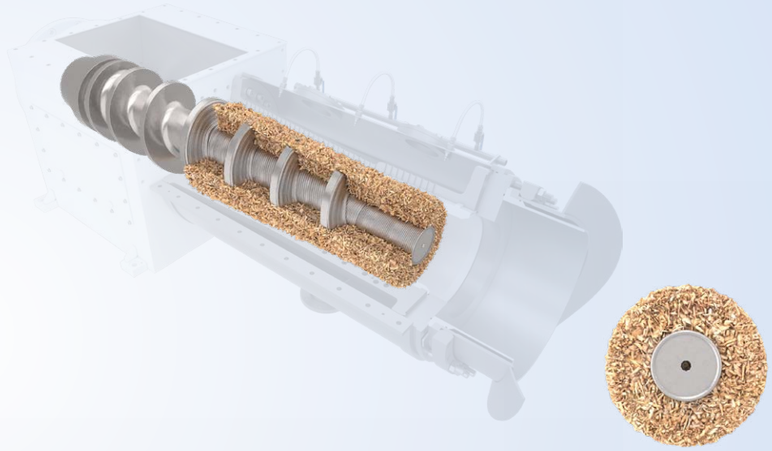


Motor power	**60%**	0% 100%
Dewatering efficiency	**60%**	0% 100%
Dryer inlet temperature	**150°C**	100°C 200°C

*AdvaProtect Segments

Upgrade from conical to cylindrical screw design:

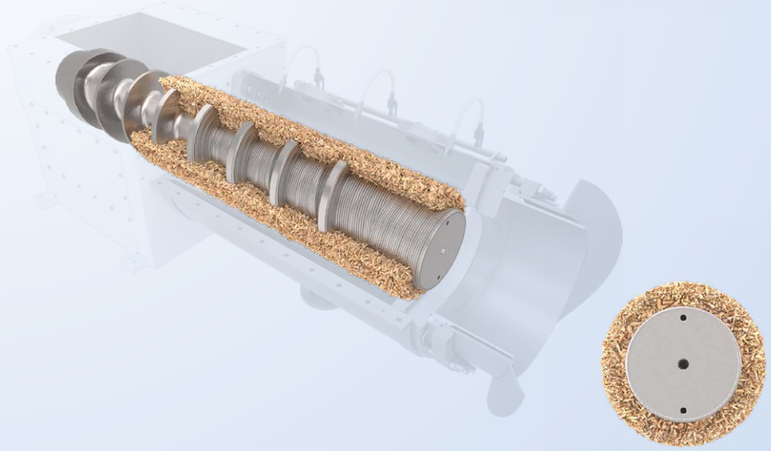
Comparison based on equal takeaway volume Conical & Cylindrical Plug screw feeder and same Compression Housing length.



Conical plug screw feeder design

Traditional conical PSF design limited the dewatering possibilities due to the large pad thickness from the screw core to the compression housing shell.

- Limited number of dewatering holes
- 100% Open Area (holes)
- 100% Pad Thickness



Cylindrical plug screw feeder design

High performance plug screw feeders for dewatering and highest performance available in the market.

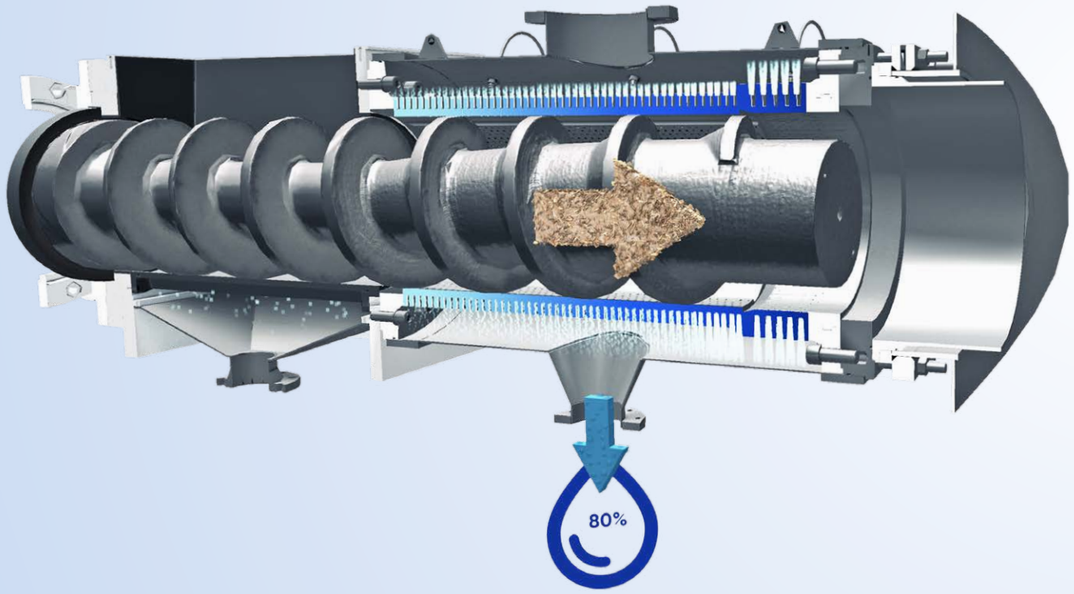
- Maximum number of dewatering holes
- 150% Open Area
- 20% Pad Thickness

APS* Multiple – Dewatering cylindrical

1967 · 2006 · 2014 · **2017** · 2021

FEATURES
- Maximized dewatering for not adjustable screw
- Maximized extension of dewatering surface before and in spool

ADDITIONAL ADVANTAGES
- Flexible process requirements due to AdvaProtect liner solution
- Gap reduction between nose and spool



Motor power	**60%**	0% 100%
Dewatering efficiency	**80%**	0% 100%
Dryer inlet temperature	**140°C**	100°C 200°C

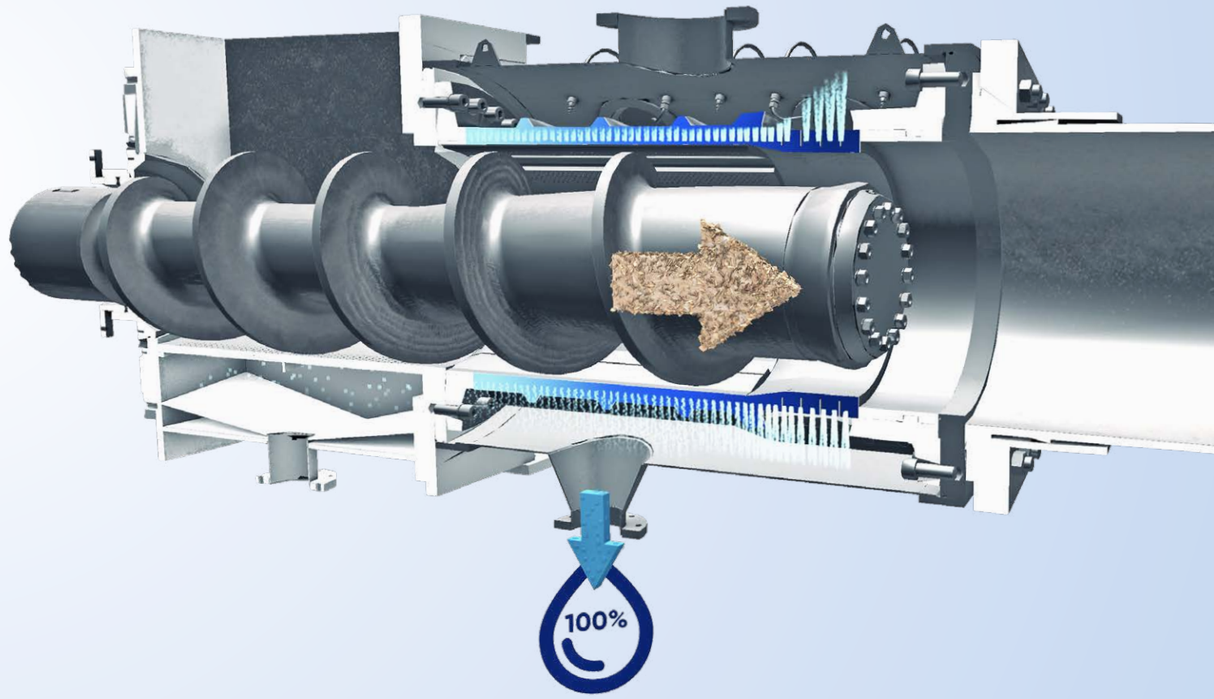
*AdvaProtect Segments

Adjustable Plug Screw Feeder

1967 · 2006 · 2014 · 2017 · **2021**

FEATURES
- Adjustable to maximized dewatering or minimized wear rate

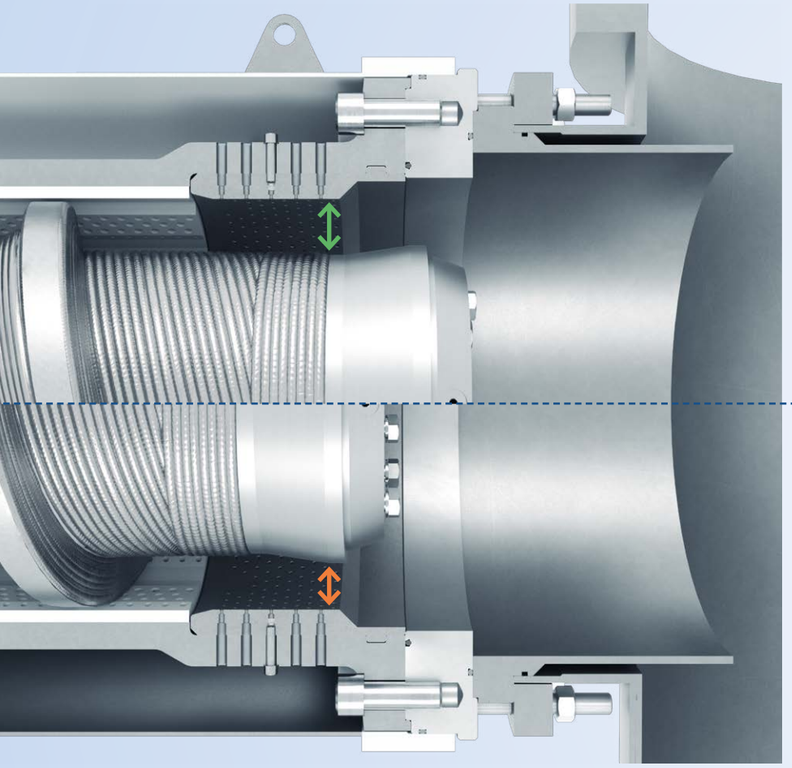
ADDITIONAL ADVANTAGES
- Smooth production – even with difficult raw materials
- Save energy – protect the environment
- Maximum operating time – minimal maintenance



Adjustable Plug Screw Feeder:

Motor power	**40-100%**	0% 100%
Dewatering efficiency	**50-100%**	0% 100%
Dryer inlet temperature	**160-120°C**	100°C 200°C

Adjustable Plug Screw Feeder



LOW RESTRICTION
» LOW COMPRESSION

HIGH RESTRICTION
» HIGH COMPRESSION

DRY Material **= Low Compression required**

Adjustable Plug Screw Feeder

WET Material **= High Compression required**

\+ Key component for Digital Wood and I4.0

Online adjustable compression setpoint with closed control loop.

Benefits for the MDF Industry

1. INCREASED RECYCLING - WOOD USAGE

- Wood and glue are the main costs in MDF production. The use of cheap wood (recycled wood) reduces production costs enormously

The use of cheap wood (recycling wood) will reduce the production costs drastically.

2. MAXIMIZED THERMAL ENERGY SAVING

- The compression can be adjusted to the moisture contend of the incoming material (softwood / hardwood / mixture)

Maximizing the dewatering performance by adjusting the compression according the raw material needs will reduce the thermal energy (e.g. natural gas) consumption drastically.

3. TROUBLEFREE PRODUCTION - NO BLOCKING

- Raw material fluctuations cause no blocking problems anymore due to the adjustable compression
- Reduction of torque, vibration and wear for the drive train when starting and producing due to less compression

More reliable production, no plug screw feeder blocking anymore. Less maintenance costs on the drive train.

4. MAXIMIZED PRODUCTION

- The adjustable Plug screw feeder enables to control the amount of effluent and the dryer inlet temperature

Elimination of bottle necks in production (max. effluent, max. dryer performance) by dynamic control of the dewatering performance.

5. REDUCTION OF WEAR ON PLUG SCREW FEEDER, COMPRESSION HOUSING AND SPOOL PIECE

- When using fresh and wet raw material > high compression beneficial
- When using old and dry raw material > low compression beneficial

Reduction of maintenance costs due to longer life time of Plug screw feeder, compression housing and spool piece.

6. REDUCTION OF ELECTRIC ENERGY FOR THE PLUG SCREW FEEDER DRIVE

- When using fresh and wet raw material > high compression beneficial
- When using old and dry raw material > low compression beneficial

Less compression means less power consumption and therefore reduced electric energy costs.

TO DISCOVER THE BEST SOLUTIONS FOR YOUR NEEDS, PLEASE CONTACT YOUR RESPECTIVE KEY ACCOUNT MANAGER

We also want to take up your challenges! For more information about ANDRITZ's services, please visit andritz.com/refiner-service for details.

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