



MODELLING – WET LAY UP

– INFUSION – VARTM

– PREPREG – ASSEMBLING

PARIS FRANKFURT LONDON MILANO BARCELONA BRATISLAVA SHANGHAI NAGOYA DUBAI PUNE DETROIT MEXICO CITY

COMPOSITE MATERIALS FOR WIND TURBINE BLADES



ISO 9001



ISO 14001

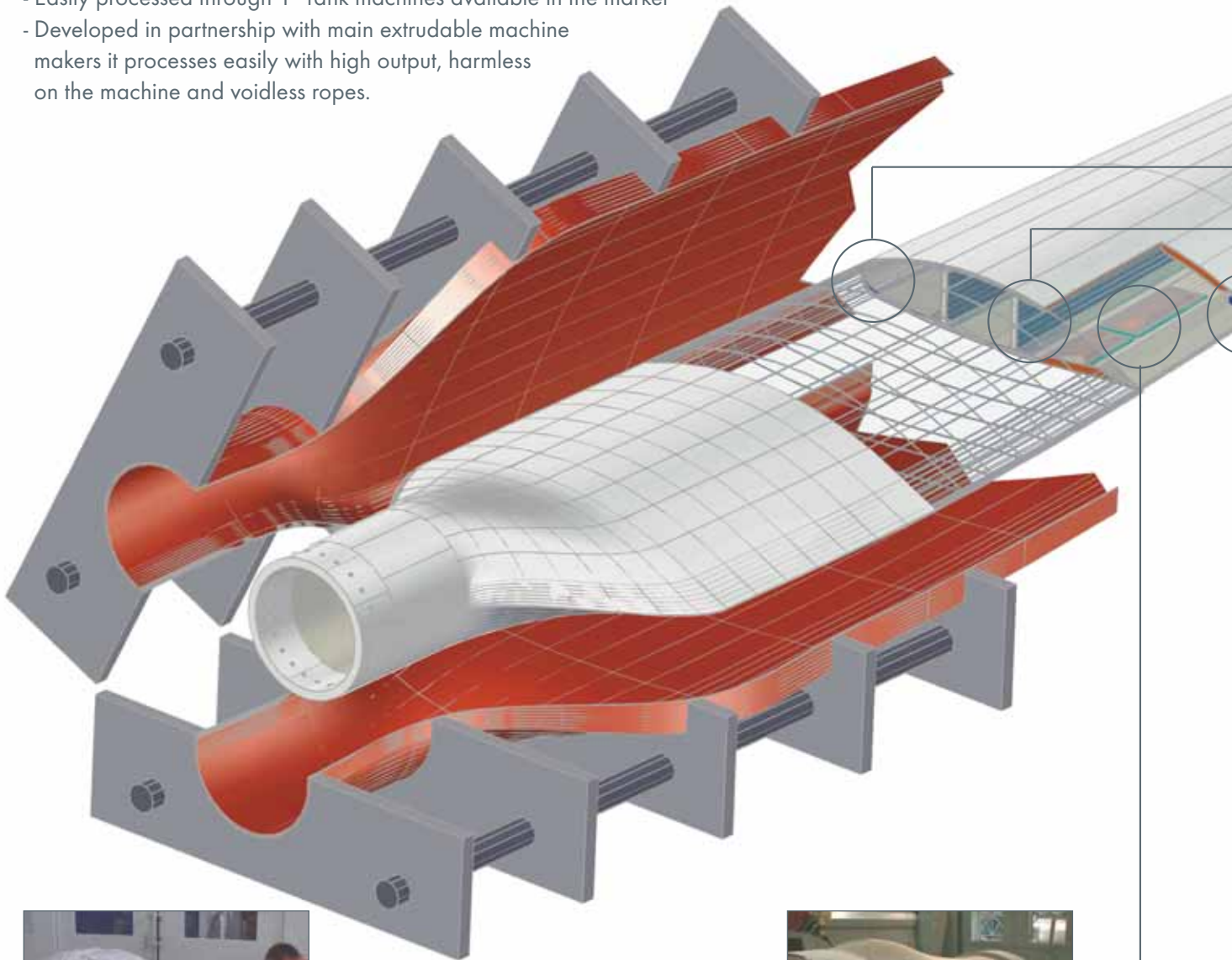


Innovative & comple

Axson has developed a broad range of innovative products and solutions for the production of composites wind blades. Axson has used its expertise in formulating thermosetting resin systems to meet wind blades manufacturer's requirements and expectations from quality to productivity. Every single step in the making of a wind blade has been given deep research and development in both formulations as well as processing. Axson provides today with the **EPOWIND®** range a full package proven technical A to Z solutions in partnership with major wind blade manufacturers on all continents.

PLUG / MASTER

- Unique extrudable paste systems with market leading system SC 175.
- Brand new SC 390 enabling minimum surface preparation for long lasting plugs for any production method from infusion to prepregs.
- Time saving in application and milling.
- Durable and cost effective solutions.
- Easily processed through 1st rank machines available in the market
- Developed in partnership with main extrudable machine makers it processes easily with high output, harmless on the machine and voidless ropes.



Paste application

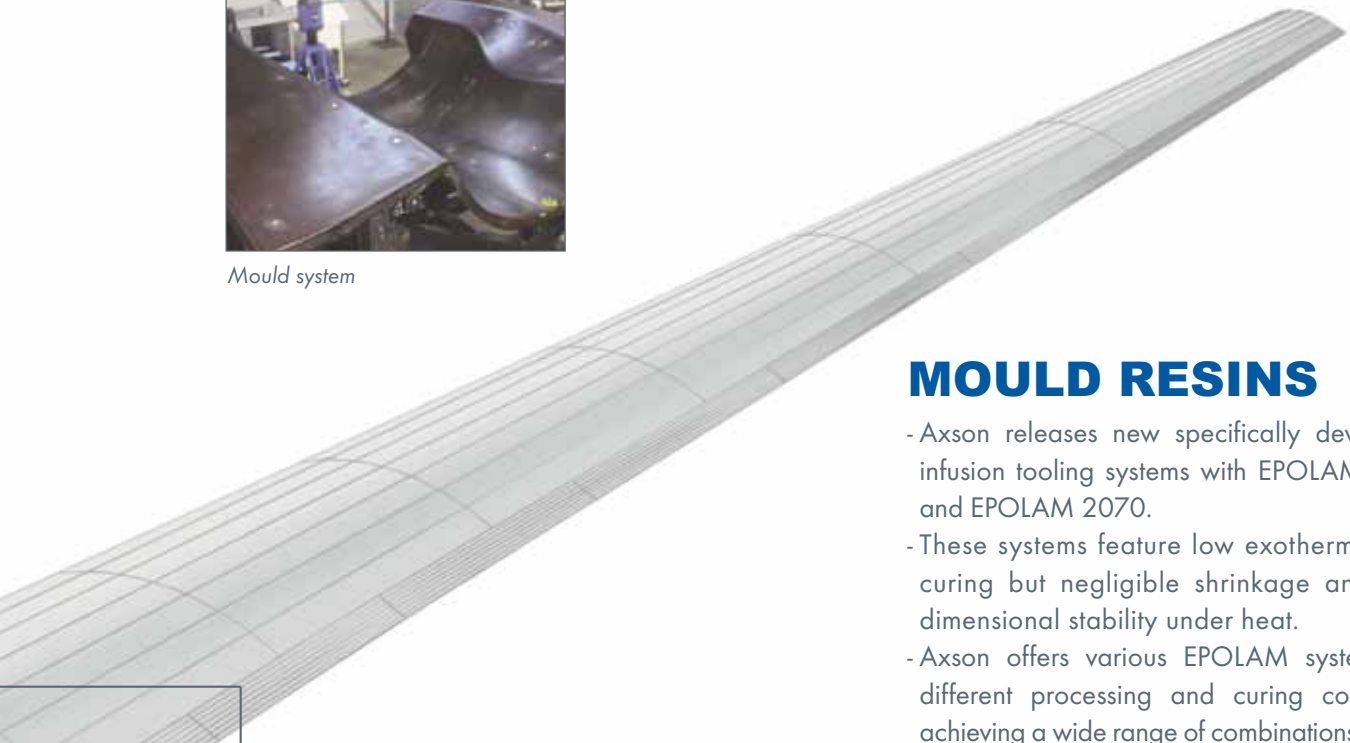


NC machining

ete solution provider



Mould system



MOULD RESINS

- Axson releases new specifically developed infusion tooling systems with EPOLAM 2019 and EPOLAM 2070.
- These systems feature low exotherm, quick curing but negligible shrinkage and high dimensional stability under heat.
- Axson offers various EPOLAM systems for different processing and curing conditions achieving a wide range of combinations with or without the use of a gelcoat.

BLADE RESINS

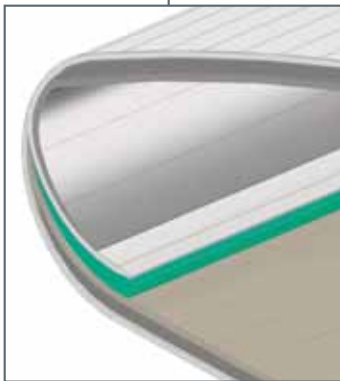
GL approval **EPOWIND®** EPOLAM 2040 brand new system with optimized processing ability and complying with Germanischer Lloyd's standard for wind blades.

BLADE ADHESIVES

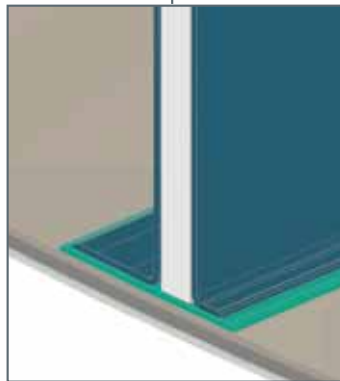
GL approval **EPOWIND®** H 9910 newly developed system is a thixotropic pasty adhesive system that not only meets Germanischer Lloyd's standard for structural bonding of blades. H9910 benefits of Axson's extensive expertise in the formulation of similar systems displaying easiness of processing through a metermix equipment with high output and low weariness on the pumps.

FINISH / REPAIR

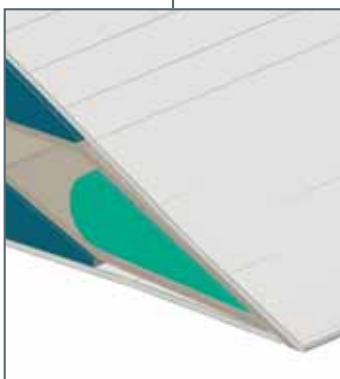
Axson provides customized technical solutions for the finishing of blades such as various mastics or adhesives needed for small components as well as balancing weight of blades.



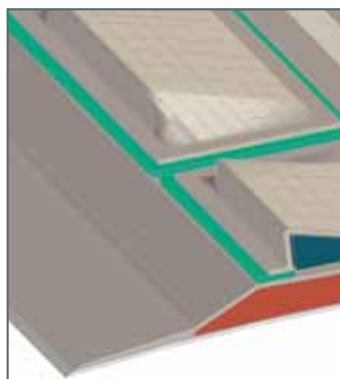
Leading edge



Spar/shear webs



Trailing edge



Balancing box

Products overview

PLUGS / MASTERS							
Reference	Description	Colour	Mixing Ratio	Density	Hardness SHORE D	TG final (at 60°C/80°C)	CTE 10-6.k -1
SC 175	Plugs and models production by extrusion machine. Tool making/models.	light grey	100/100	0.63	48/53	83°C	70
SC 390	Plugs and moulds production by extrusion machine.	grey	100/100	1.08	65/75	82/90°C	< 60

MOULD SURFACE							
Reference	Final TG	Description	Colour	Mixing Ratio	Density	Hardness	Gel time
GC1-160/GC16	160°C	Sandable & polishable.	black	100/20	1.25	88	50'
GC1-190/GC22	185°C	Sandable & polishable.	black	100/13	1.59	90	120'

MOULD RESINS BY WET LAY-UP							
Reference	TG	Description	Mixing Ratio	Viscosity	Pot life	Flexural Modulus	
EPOLAM 2020	110°C	Excellent wetting ability, and adjustable reactivity room temperature pre-curing.	100/34	500 cps	15-135'	3100 MPa	
EPOLAM 2050	130°C	Good wetting, room temperature pre-curing, easy post-curing cycle.	100/32	2000 cps	80'	3300 MPa	
EPOLAM 2010/2025	160°C	Warm pre-cure necessary, easy post-curing cycle.	100/24	1800 cps	80'	3000 MPa	
EPOLAM 2080	200°C	Warm pre-cure necessary, easy post-curing cycle.	100/41	3100 cps	135'	2800 MPa	

MOULD RESINS BY INFUSION / VARTM							
Reference	TG	Description	Mixing Ratio	Viscosity	Pot life	Flexural Modulus	
EPOLAM 2019	110°C	Room temperature pre-curing before demoulding.	100/35	250 cps	95'	3000 MPa	
EPOLAM 2035/2025	130°C	Warm pre-curing necessary.	100/27	400 cps	105'	2800 MPa	
EPOLAM 2070	160°C	Warm pre-curing necessary, excellent combination of heat resistance and ageing performance.	100/31	450 cps	180'	2800 MPa	
EPOLAM 2090/2026	200°C	Very long open time for convenient processing warm pre-curing necessary.	100/53	650 cps	850'	2800 MPa	

MOULD PREPREGS							
Reference	TG	Description - Amber Composites technical partnership:	Initial cure	Post-cure	Work life at 20°C	Storage life at -18°C	
HX-50	190°C	Low temperature glass or carbon tooling prepregs.	18h at 40°C or 6h at 55°C	16h cycle for Tg max	2-3 days	6 months	
HX-42	200°C	Easy processing, high strength and stability.	18h at 50°C or 5h at 65°C	16h cycle for Tg max	5 days	12 months	

BLADE RESINS							
Reference	Description	Mixing Ratio	Viscosity	Gel time	Final Tg	Flexural Modulus	
EPOLAM 2015/2014 2015/2015 2015/2016	Production of large parts, by wet lay-up or RTM techniques.	100/32	650 cps	150'	91°C	3100 Mpa	
		100/32	530 cps	360'	88°C	3000 Mpa	
		100/32	450 cps	800'	81°C	2900 Mpa	
EPOLAM 2040/2042 2040/2047	Infusion, VARTM system for the production of blades. Adjustable reactivity, high structural performance matrix being GL Approved. 	100/32	300 cps	100'	92°C	2900 Mpa	
		100/32	240 cps	300'	85°C	2900 Mpa	

BLADE ADHESIVES							
Reference	Description	Colour	Mixing Ratio	Open Time	Lap shear strength	Peel strength	Working temperature
H 9910 / H 9912	Structural epoxy adhesive system for assembling blade components. Adjustable reactivity and GL approved. 	green	100/45	30	16	NA	90 (Tg)
H 9910 / H 9918		green	100/45	120	21	NA	80 (Tg)
H 6256	Thixotropic PU adhesive paste with adjustable reactivity, good wetting and fast room-temperature curing with low exothermy.	grey	85/100	10-100	14	NA	- 40 / + 100°C

REPAIRS/FINISHINGS	Customized technical solutions.
BLADE BALANCING	Convenient ready to use casting systems for the making/filling of balancing boxes.
VACUUM BAGGING ACCESSORIES	DIATEX technical partnership vacuum bag, sealant tape, infusion net, peel ply, perforated film, infuplex.
REINFORCEMENTS	SELCOM technical partnership glass and carbon multi axial fabrics, and standard woven fabrics.
ACCESSORIES	Pore sealants and release agents.

Technical partners:

AMBERCOMPOSITES



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