PRODUCT PROTECTION FOR WIND ENERGY



F.A.KRUSE JUN. ENERGY SERVICES AND LOGISTICS

FÄHRSTRAßE 49

25541 BRUNSBÜTTEL



About us



- > Headquarter Brunsbüttel
- Year of establishment 2010
- Certified to ISO 9001 and SCC
- **Direct employees 20**
- Indirect employees 430













Portfolio F.A.Kruse ESL (Energy Service and Logistics)





Encapsulation ...with shrink foil

Protects against:

- **Environmental influences**
- > Dust and dirt
- Harmful emissions
- **UV** Radiation

flame retardant

dusttight

sea water resistant



Material shrink foil:

...polyethylene







- **▶** Bi-directional shrinkage
- Thermal process (welding and shrinking)
- Flame retardent (LPS, B1, M1)
- Resistant to acids, bases, oils and other media
- Recycable
- All RAL colors avaiable as well as transparent
- **Accessories specified individually**



VIDEOs: fire resistant







not fire resistant

Wrapping examples ...shrink foil for wind energy















Nacelles







Rotorblades / Blade Forms / Tools

Gearings / Generators

Rotor Hubs









Application: scaffolding

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higher safety level



fast, simple

implementation

- **Renovation works**
- Chemical industrie
- Bridges and towers
- Industrial projects
- Tents and covers





very economical







Application: offshore



- Maintaining and repair requests
- oil rig repairs

ship repairs

- **Corrosion treatment**
- > Rust and paint removal
- **Blasting operations**
- Coating and painting works

... you can work without an environment hazard. 1902
The shrink foil makes an economical tent, plant or
shelter which can be built up very fast.

in shipyards









Application: wind industries



very large products

- Long term storage with uv and dust protection
- > Transport protection
- > Sea water resistant
- the best protection
- Flexibel with doors or other features
- Cover for openings











sensitve materials







Application: blade manufactory



- Long term storage with uv and dust protection
- > Transport protection for blade forms
- Complete protection of sensitive forms
- Partial protection is possible (Tip / Root)

... special materials and paintworks could be protected and would be safe.

blade forms







partial protection









APPLICATION: BOILER



- > Sea water resistent (continental transport)
- No pollutions, less damages (also at the transportation)
- ► UV-protection, resistent against influences

... simple handling at transportation and assembly for

manufacturers and costumers









different structures









with VCI Materials

shrink wrapping examples













Industrial boilers

Machine components

Special materials











Generators / gearboxes

Equipment / Vehicle fleet







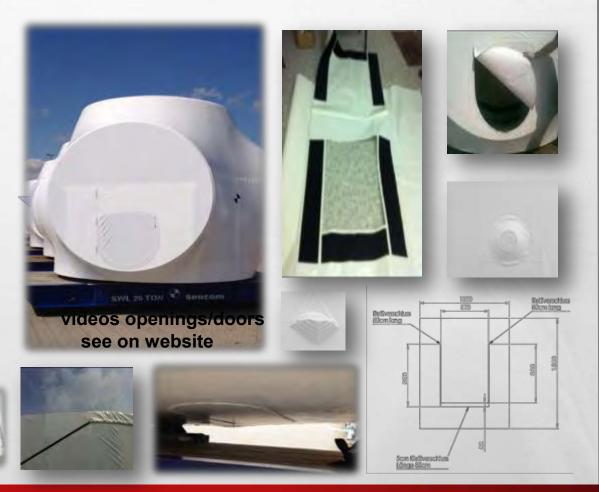


Suitable accessories



- > Openings / doors
- **Ventilation**
- Material combinations
- Lashing straps / attachment
- **Descriptions and documents**





Corrosion prevention

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- VCI material installer
- **Corrosions inhibitor for metal surfaces**
- In form of foil, film, paper, diffuser
- Weather protection, protective coatings and insulation
- Body-cavity sealing / in house corrision protection

The term VCI or VPI stands for a substance class of volatile substances, which have the property of sublimating directly from the solid state into the gas phase due to their high vapour pressure. From the gas phase, these substances form a monomolecular protective film, which protects against corrosion, on metal surfaces.

http://www.excor.de/en/vci/whatsvci/index.htm









Documentations

... technical quality instructions

TO Committee Name In Technische Qualitätumweinung Art der TOI TQI mi essen l'estespooloks TOT to storm Errerckhauppropert TQL no to visuo spensing Projekt Organizationnils Antipales TQU/mmmm. Revoluntarious Q-Melitrag Exhibitying M Tomp Geptial visc Frequentina Distant Caterochrift Africaling | Bernell M Intelles Mounte studener Bereich Richmabichitmag Creat der Errichung obas Augstie olas Argain SUSMINE Achemonetal **Sublementalisms** Seinsbiegh) Limberheatheatheathean sermorben Printer Verdigloober techaniche Optenzierung Einfrürung von Gertriebbarer contraction activation. Section legislation on the operations of inclinage. Fitting in the Pitt of our Principles (in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Pitt of our Principles (in the Operation) in the Operation (in the Operation) in the Operati Diese Delegant marileg in respectation Zorand sixti den Aphroppitiens

Quality instructions

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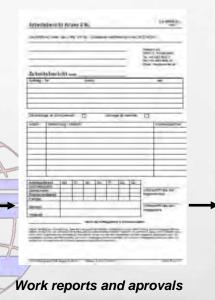
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approvals

inspections



Individually product checklists

reports

Arrigany

PARTY



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SELLEDZ



Instructions with sticker on shrink foil



The protection makes the difference!

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Risk analysis and risk assesments





Risk assesment

	Probability (W) 0,2 nearly impossible 0,5 conceivable but unlikely 1 unlikely but possible 3 possible 6 very possible 10 expected			Exposure (B)		Seriousness (E)							
				0,5 very rare (<1x/year)		slight, no work stoppage important, injuries with lost time seriously, with permanent injury			R < 20	Alery III	mited risk		
				1 rare (few times a year	r)				20 × R < 70 requires attention				
				2 sometimes (monthly)					70 × R × 200 measures required				
				3 occasionally (weekly) 6 regularly (daily) 10 continuously		15 very seroius, with dead 40 disaster, multiple deaths 100 catastrophe, may deaths			200 < R < 400 Introduction interdy-month				
	F-4 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.		Risks		Contro	ntrol measures			В	E	Risk Index	ction by	Dens
			Fire hazard	Avoid open flames and sparks			0,2	2	0,5	0,2	when?	Done	
			Influence of liquifier of adhesive in	Use facial mask with app	Use facial mask with appropriate filterr			0,1	0,1 2 2 0,4	70,4			
ührende Arbei	iten:	Gefährdu	ngen:	Gefahr durch:									
Anbringung und F	ingung und Entferner von Schrunpifolien		aplostompelkhelung r	Arbeiten in Fildel Bestatung von fahrheren Hebelutinen Arbeiten in Klebe Bestatung von fahrheren Hebelutinen Arbeiten mit Kelebuffer Arbeiten int heilen Medlem (Kontakt) Arbeiten int Lamberrich Questabgefahr durch bewegende Arbeitsmistell Stolpengefahr	g gloves a	gloves and PPE			2	1	0,2	5.08.2012	06.08.2012
			lurds Gefalmouffe Gefalming		otection equipment (PPE)			0,1	2	4	0,2		
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P					SOLL St. MID	ing the with	Staff may be injured by the paste.	paste und know the risk: assurance data sheet.	team will be attentive during the		Sending trained and competent personnel. Introduce the personnel in the specific work		06.08.2012
					MALE U. Wis	INT over	Staff may be injured if fall down from the hydraulic	during installation.	working clothing will be worn tallation. will be attentive during the specific work Sending trained and competent personnel. Introduce the personnel in the specific work			06.08.2012	06.08.2012

Certifications







LPS 1207 and 1215

TUV NORE

M1 & Euronorm EN 13501 b, S1, d0

DIN 4102 TEIL 1: B1, M1, EN 13501-1: 2007 + A1:2009





(ENGLAND) LOST PREVENTION CERTIFICATION BOARD - LPS1207 & LPS1215 BRE/LPCB (FRANKREICH) CSTB/SAFRAN - (EUROPE) WARRINGTONFIREGENTEIT 19092

OUR ESTABLISHED INSTALLERS HAVE RECEIVED
THE LATEST SAFETY TRAININGS AND MEET ALL
THE LEGAL REQUIREMENTS AND STANDARDS

PERSONAL PROTECTION EQUIPMENT, FIRE PREVENTION OFFICERS, MEDICAL HELPERS AND MORE



Locations





WORLD WIDE PRODUCT PROTECTION TEAMS

BELGIUM, NETHERLANDS, FRANCE, UK, SOUTH AFRICA, AUSTRALIA, GERMANY,

SCOTLAND, IRELAND, SWEDEN, NORWAY, SPAIN, ROMANIA, LATIVA

REGIONAL LOCATIONS

BRUNSBÜTTEL / BREMERHAVEN / GREIFSWALD / BERLIN

MOBILE OPERATION TEAMS FOR GERMANY

AND OTHER PARTICIPATING COUNTRIES

"Together with our network of companies, agents and installers specializing in the installation and sale of VeriSafe ® shrink-wrapping film, we aim to build bridges between different markets and their specific expertise. We share our knowledge and aim to offer solutions with the best knowledge and skills available. We want to create a truly international "quality synergy" in the profession of industrial encapsulation for protection against weather conditions, and this with most respect for the environment and the workers." *Gommaar Timmermanns, CEO Verisafe 2014





The protection makes the difference!



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ENERGY SERVICES + LOGISTICS GMBH

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Wrapping Examples ...shrink foil for wind energy















Nacelles









Rotor Hubs







