

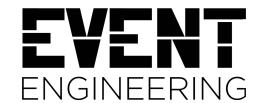
Metal Design Group Pty Ltd Australias Most Versatile Solar Ground Mounting Experts!





- Headquarters in Bavaria, Germany
- Founded in 1994
- Krinner Australia NSW
- Ground Screws Australia QLD
- Established in Australia in 2006
- Over 3 GWp built world wide
- Over 150 patents, globally
- Over 30 different types of inhouse developed installation machines
- Over 300 specialized machines currently in use
- Represented world wide

Some of our valued clients that trust in us.

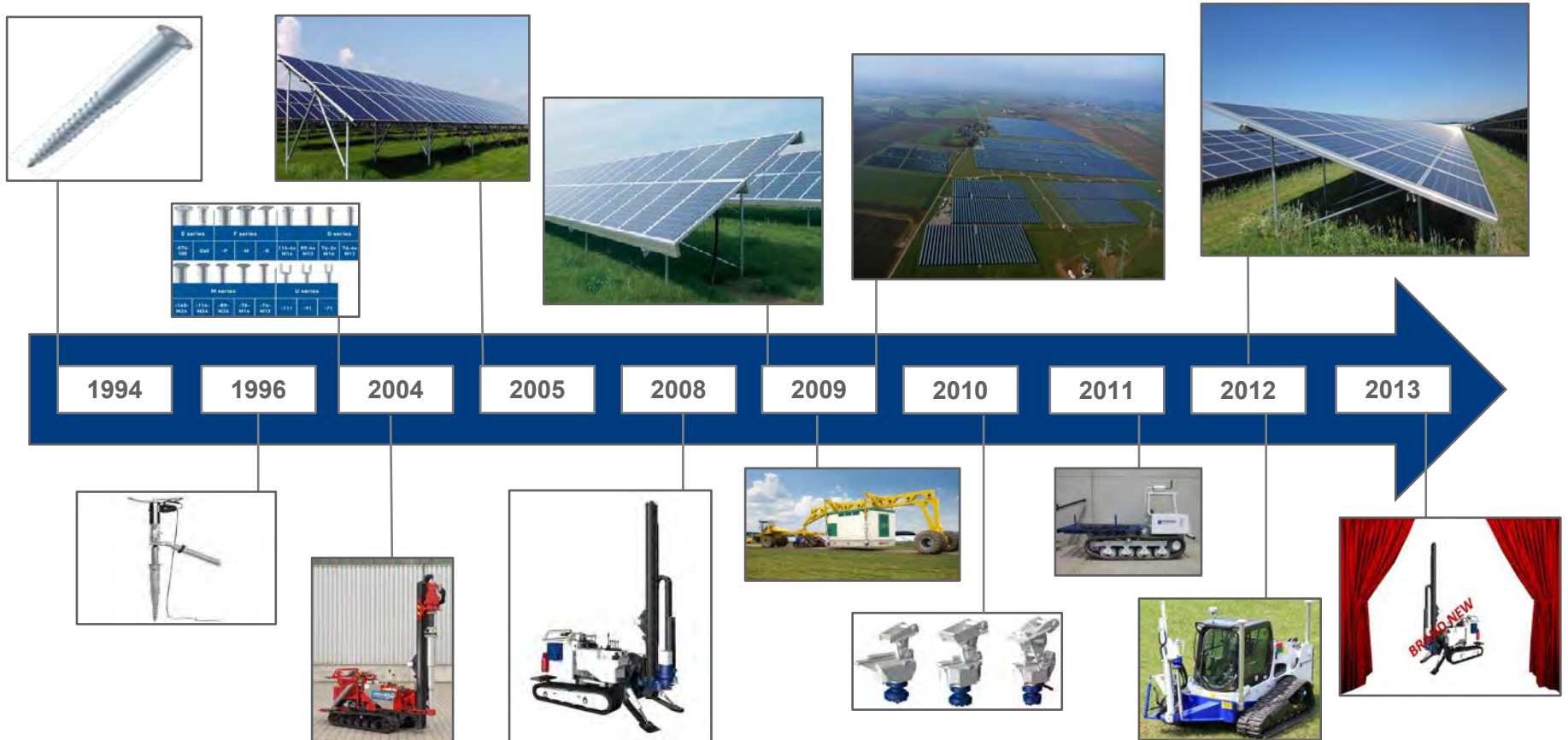


Prepared for all local conditions through the experience of more than 50 global partners

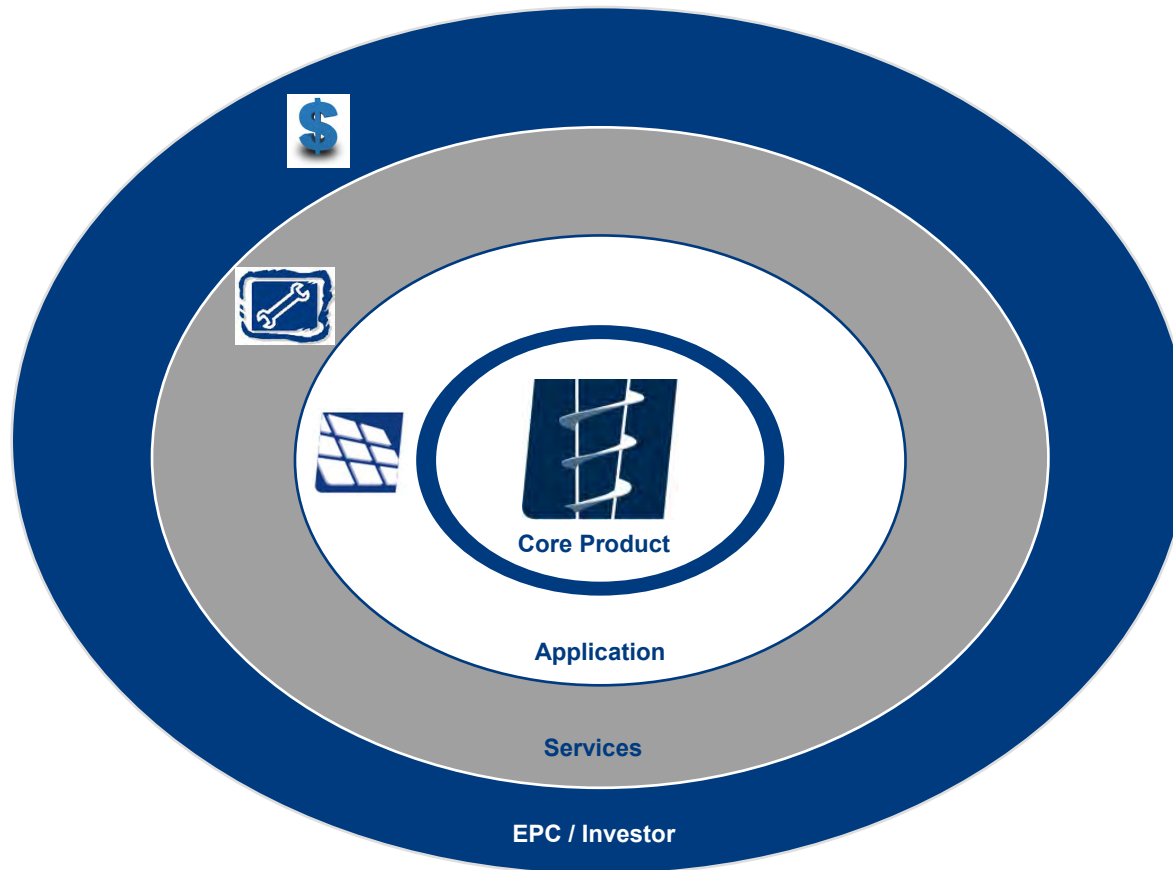


- | | | | |
|-----------------------------|------------------------|----------------------|-----------------------------------|
| • Angola | • Denmark | • Japan | • Slovenia |
| • Australia & NZ | • Dubai | • Kazakhstan | • Slovakia |
| • Austria | • Estonia | • Kuwait | • South-Africa |
| • Azerbaijan | • Finnland | • Latvia | • Spain |
| • Barbados | • France | • Lithuania | • Sweden |
| • Belarus | • Georgia | • Luxembourg | • Switzerland |
| • Belgium | • Germany | • MENA | • Thailand |
| • Brazil | • Great Britain | • Mozambique | • Turkey |
| • Bulgaria | • Greece | • Netherlands | • Ukraine |
| • Canada | • Hungary | • Poland | • United States of America |
| • Chile | • Iran | • Portugal | |
| • Croatia | • Israel | • Romania | |
| • Czech Republic | • Italy | • Russia | |

New developments in products, machines and procedures characterize the company

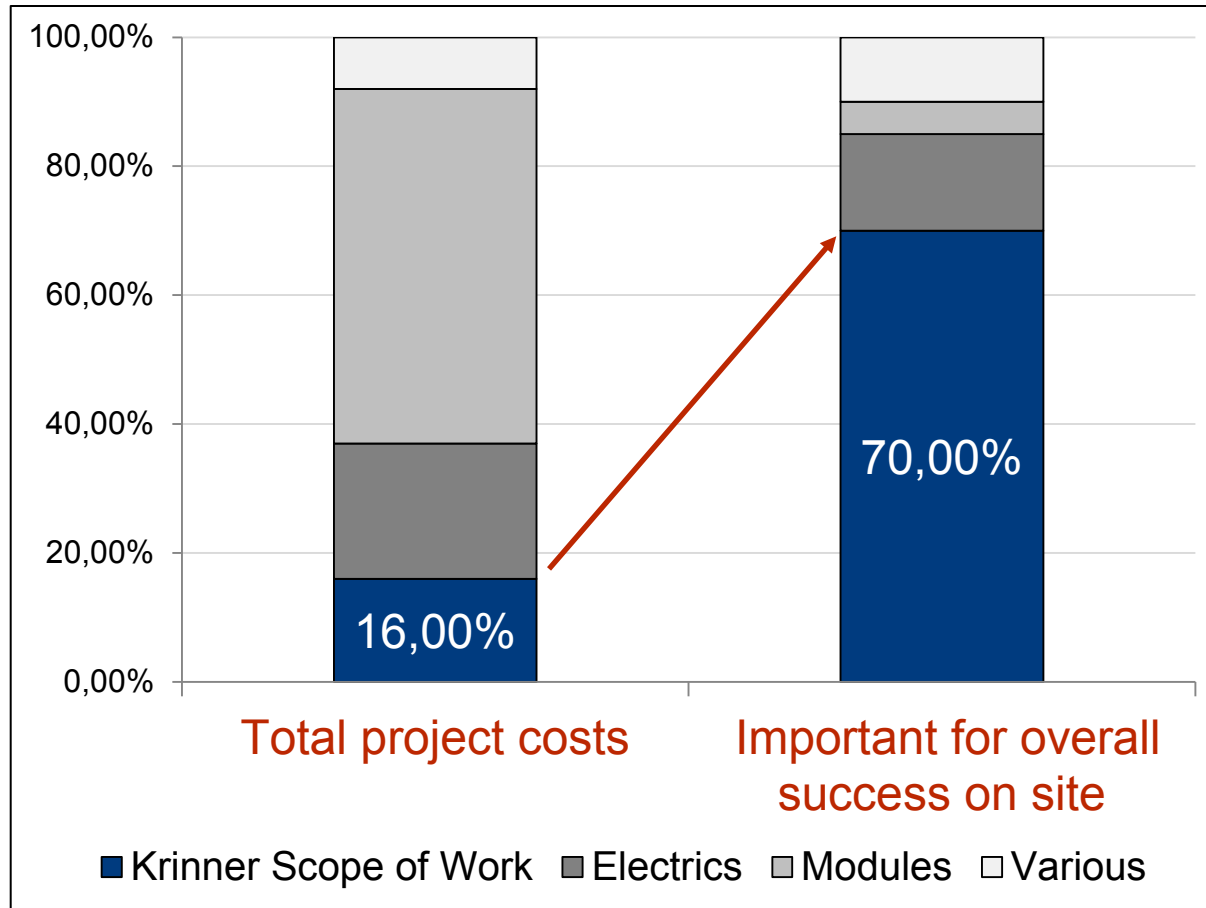


We tailor our solution to your needs



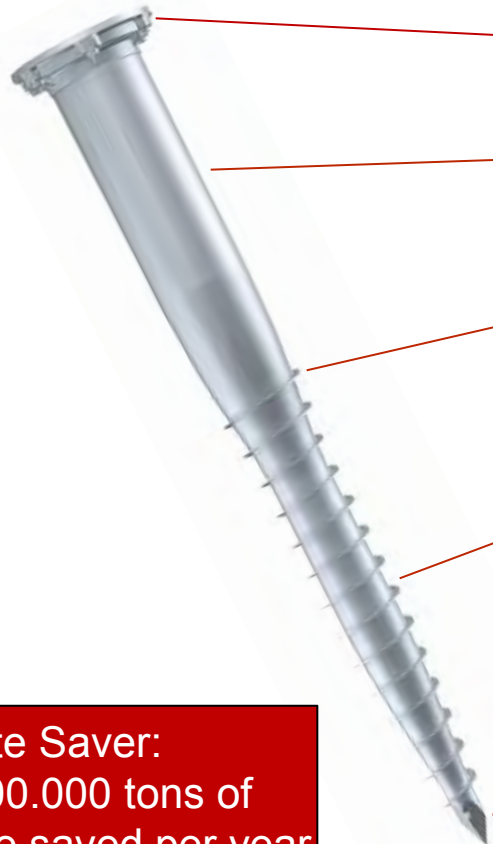
- Variable scope of work
- Made to measure
- Maximum flexibility
- Maximum compatibility

16% of the costs ensure 70% of the quality!



- While Krinner's scope of work only accounts for 16% of the total project costs;
- Krinner's scope of work influences the success of the project on site to a degree of over 70%.

Saving time, cost's & the environment



Innovative Variable Head Attachments

Variable connections widen the field of applications.

Hot Dipped Galvanized Steel

The Ground Screws are galvanized according to DIN EN ISO 1461 increasing corrosion resistance.

Patented Conical Body

Patented conical body forged from a single piece of tubing maximizes stability. The transitions from conical to cylindrical are rounded, guaranteeing utmost quality and better contact with the ground.

Advanced Spiral Thread System

The continuous welded helix facilitates smooth installation as well as easy penetration even in the toughest soil conditions. Increased thread **spacing** reduces installation time, whereas the new thread **width** provides more load bearing capacity.

High-Tech Screw Tip























The new advanced screw tip ensures accurate positioning and easy penetration into all soil types.

Concrete Saver:
Over 400.000 tons of
concrete saved per year

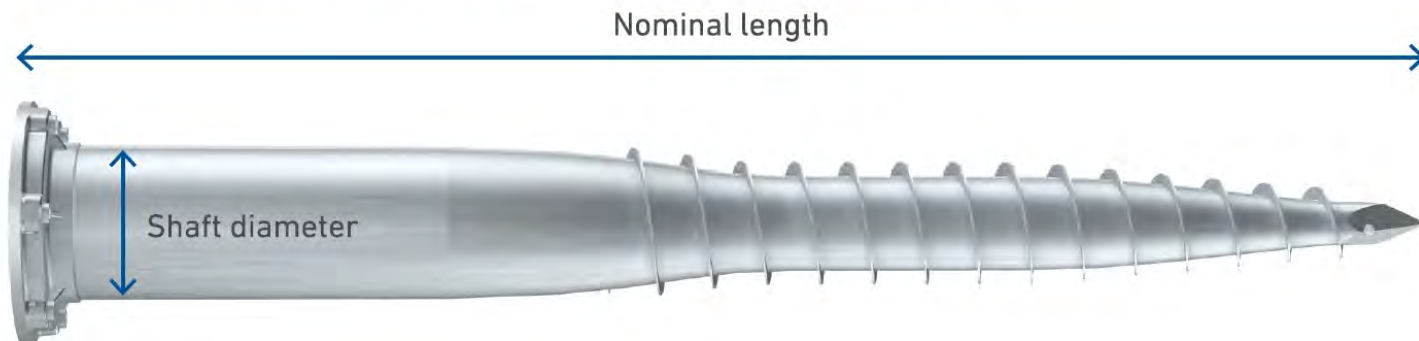


U* : Ground Screws can bear up to 100 \ N (10 Tons)

Ground Screws enable applications of immense diversity

																					
E series		F series			G series						K series	M series					U series			X series	
-E76-100	-E60	-P	-M	-R	114-4x M16	89-4x M12	76-3x M16	76-4x M12	66-3x M8	66-1x M8		-140-M24	-114-M24	-89-M24	-76-M16	-76-M12	-111	-91	-71	-LP	

Designation code for KRINNER Ground Screws

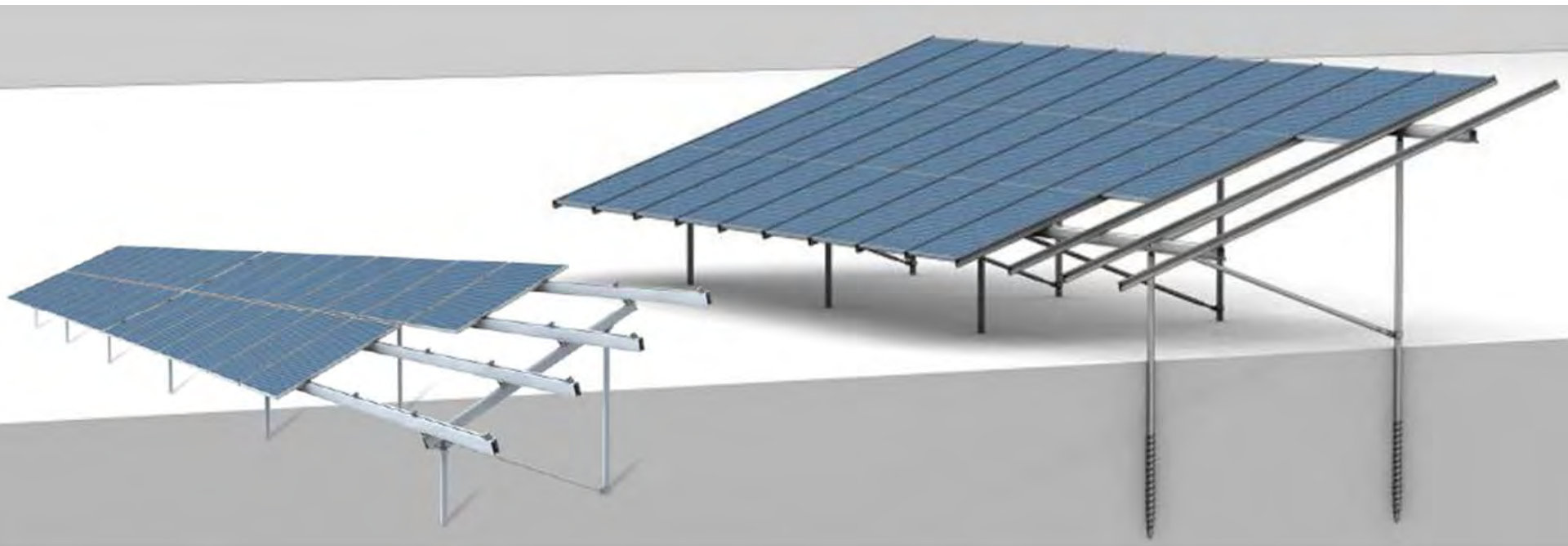


e.g. KSF E 140x1300-E76-100

24 types of S-Ground Screws are optimized for various applications in the PV industry



Flexible racking-systems provide tailormade solutions



Flex III

Flex V

Our solar-systems fit your individual requirements



- Suitable for all types of soil
- Suitable for all types of modules
- Suitable for all wind loads, incl. cyclonic
- System-based maximum flexibility and compatibility
- Project-based static calculations and structural engineering
- Quick installation
- Highly cost and material efficient

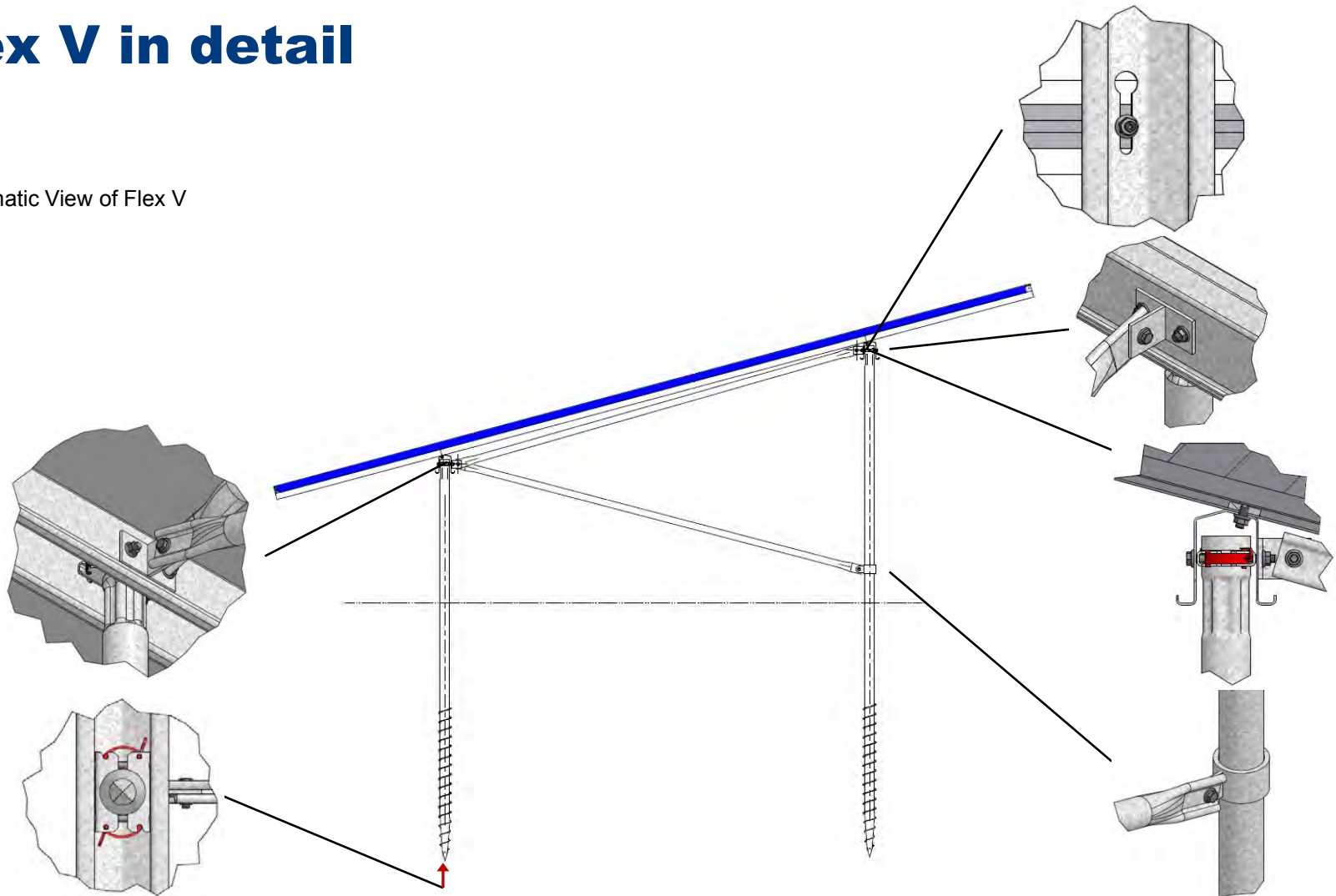
Flex V sets the standards: Fast, tough and cost efficient



- Developed to enhance further cost savings
- Statically verified and optimized to comply with Australian Standards
- Includes further assembly optimizations
- The best possible use of material per MWp

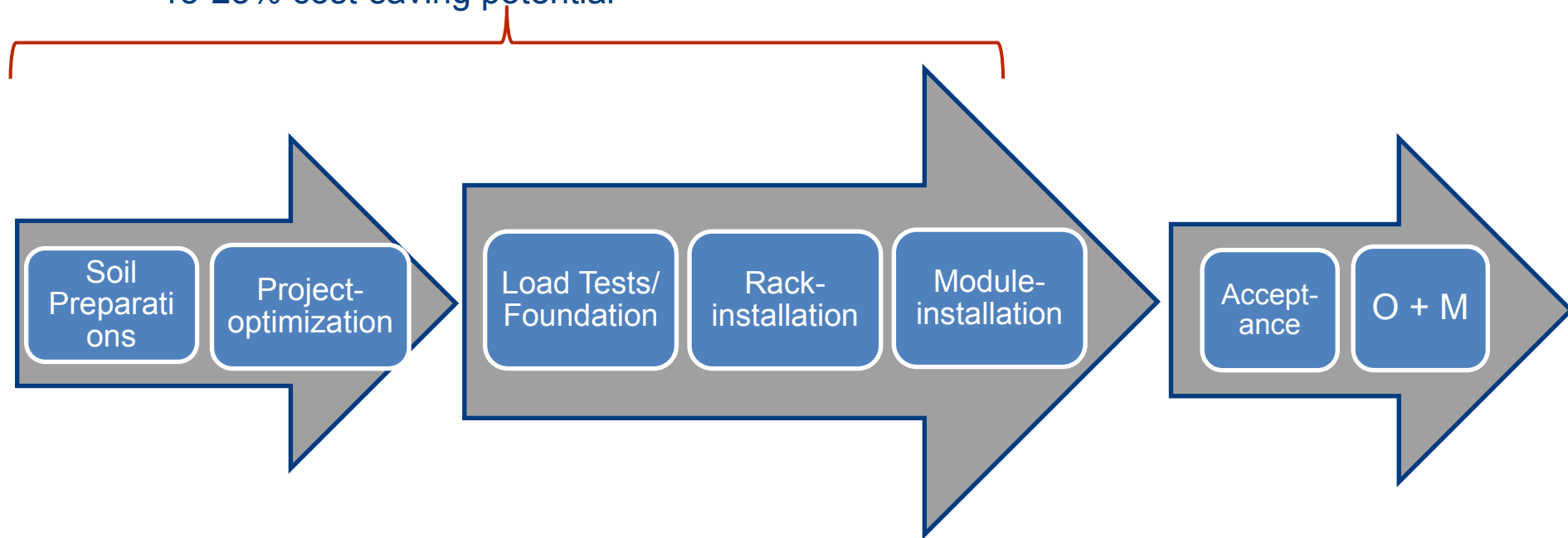
Flex V in detail

Schematic View of Flex V



A comprehensive optimization of the process flow results in leadership in price and quality

15-25% cost-saving potential



Our in house developed machines are experts in their own field of applications



The Krinner Surveying and Drilling Robot (KRM) provides up to 4 000 survey points in 24 hours



- Designed for large scale PV ground mount systems e.g. with KRINNER screw foundations
- Surveying, pre - drilling and documenting in one single step
- Online - monitoring from any location
- Storage of all data and rapid evaluations

Our latest inhouse developed machine is able to execute 3 to 4 steps simultaneously

Krinner installation robot:

- No pre-drilling necessary
- GPS based surveying
- X/Y/Z-hammer screwing
- Installation of 2 groundscrews simultaneously
- Z-leveling of foundations



As soil experts we can help to save you money, and guarantee the completion of your project in time.

Professional soil preparation can be achieved with a very small investment resulting in huge cost savings, the reduction of construction time of PV projects, and a dramatic reduction of operating costs.

**Surface soil damage on a
conventional construction site**



**Krinner soil preparation
example project site**



Our extensive experience is your guarantee for a successful project without nasty surprises!

Disturbed soil condition at a project using conventional footings



Krinner soil preparation example project



Advantages of professional preparation

- Huge cost saving potential due to fast installation and shorter construction times
- Prepared for all possible weather conditions
- Saving operating costs for the complete construction duration
- Low environmental impact and complete dismantling and ground restoration possible

**Our Sustainable Solution:
The entire installation can be reversed,
100% recycled and the terrain restored to it's original state!**



Krinner Project References





Germany

Gansdorf

55 MWp

51 160 Ground Screws

New Caledonia
Pouembout
2 MWp
2 800 Ground Screws



Australia

Cannington Mine
South 32, QLD

3 MWp

2600 Ground Screws



Australia
Lake Cargelligo NSW
3 MWp
980 Ground Screws



Australia
MC Herd Corio VIC
1.35 MWp
660 Ground Screws



Australia
Doomadgee QLD
265 KWp
496 Ground Screws



Australia
Icon Water ACT
640 kWp
580 Ground Screws



Australia

Ballarat Airport VIC

330 kWp

440 Ground Screws



Australia
Bundaberg QLD
180 kWp
160 Ground Screws



Australia

Liddell Power Station
Singleton NSW

9.5 Mwp

7 360 Ground Screws



Australia

BHP Newman WA

150 kWp

120 Ground Screws



Australia

Normanton Solar Farm
Normanton North QLD
5 MWp - ARENA Project
5 600 Ground Screws
Cyclone Rated Krinner
Flex III Mounting System



» KRINNER created one of the largest
solar parks in the world
Solarpark CESTAS – A Building of Superlatives

France

Cestas Solar Farm

South of France

300 MWp

200 000 Ground Screws

East - West Orientation

Flex V Mounting System

