ZAMIL STEEL

total steel building solutions

MaxSEAM™



MaxSEAM
the ultimate roofing system

MaxSEAM
the ultimate weatherproof roof system

FM APPROVED

The Zamil Steel MaxSEAM roof system is one of the strongest and most weather-tight standing seam roof systems available in the industry today. The 360 deg. seam along the side laps of the panel; the special Articulating clip, ArtiFloat; and the carefully engineered system for strength, durability and weatherability are but a few of its outstanding features.

The MaxSEAM roof system acts as a monolithic membrane that completely protects your building. It is the most recommended roof system for tropical, rainy, snowy or high wind (cyclonic) regions.

Using the Zamil Steel SuperSEAMER machine, the side laps of adjacent panels are seamed together creating a 360 deg. double lock seam, which has machine-applied butyl sealant to ensure a secure, weathertight leak-proof joint.

To further improve the weathertightness of this roof system, the end laps may be eliminated by rolling MaxSEAM panels on site, using a mobile roll former. Standard MaxSEAM panels (rolled formed in the factory) have a maximum length of 11.5m, while Panels rolled on site can achieve a length up to 90 meters.

MaxSEAM is also offered as an Ultimate Re-roofing solution allowing for installation over an existing roof through – fastened rib type roof without removing the existing panels.

Please contact your local Zamil Steel Sales Office for further information.

why use MaxSEAM
for your roof?

The MaxSEAM roof system is a Standing Seam Roof system (SSR) which is one of the most exciting breakthroughs in roofing technology in the last 25 years. For the past few years, it has been widely used in some 50% of all low-rise commercial, industrial and institutional buildings across United States and South East Asian countries. SSR has proven to be the most efficient, effective and value for money roof system for rainy, windy and tropical regions.

Weathertightness
MaxSEAM acts as a monolithic membrane that completely protects your building from adverse weather. Designed as a water barrier, the raised seam assists drainage at critical areas and, along with the machine-applied sealant (inside the seams), it increases the lap sealing to 100% tightness.

Thermal Movement
The fastening system of MaxSEAM is designed to handle the potentially damaging effects of thermal movement (especially heat expansion). The ArtiFloat clip, that holds the panels in place, is concealed inside the raised seam. It is a unique clip with a moveable feature allowing the panel to expand and contract freely with temperature changes without restraint, i.e., giving the roof surface a "floating" action and correcting the out-of plane sub-framing alignment to a maximum of 7 deg. The concealed clip system; a boltless connection to sidelaps also results in fewer through roof fasteners, minimizing the probability of leakages.

Cost Effectiveness
The life cycle cost of the MaxSEAM roof system is lower than any other conventional steel panel roof system. Using Zincalume-coated steel panel, its life expectancy is longer and lesser maintenance is required (Zincalume is a corrosion resistant Zinc/Aluminum alloy coating (AZM 150) that comprises of approximately 55% aluminum and 45% Zinc, by weight).

Testing Credentials
MaxSEAM has been tested under ASTM E1646 -95 "Standard Test Method for Water Penetration through Exterior Metal Roof Panel System" and ASTM E1680-95" Test Method for Rate of Air Leakage through Exterior Metal Roof Panel System".

FM Approvals also certifies MaxSEAM as Class 1 Panel Roofs, conforming to FM Approvals Standard 4471 (1995) with examination included simulated wind uplift pressure testing, resistance to foot traffic testing, ASTM E108 spread of flame testing, and hail damage testing.

Uplift Ratings
MaxSEAM carries UL90 Uplift ratings, tested with a wide range of installation procedures. MaxSEAM has met all test requirements as specified in CEGS 07416 Standing Seam Metal Roof System Guide Specification.

Starts and Ends with Raised Seam
Most other Standing Seam Roof systems are unable to achieve a high rib profile at gable end due to field cutting of final panel. With MaxSEAM, the gable at both ends of the roof, finishes with a 76 mm high raised seam made possible by our SuperSEAMER; thus avoiding finishing in the low, flat part of the final panel where the greatest possibilities for leaks occur.

Field Seamer and Mobile Roll-Former
MaxSEAM roof panel can be roll-formed up to a length of 90m on site by our Mobile Roll-Former to reduce the endlaps on large span structures. After which, the SuperSEAMER machine will be used to seam the side laps of adjacent panels together to create a 360 deg. double lock seam, which has a factory-applied mastic to ensure a secure and weather-tight leak proof seam.

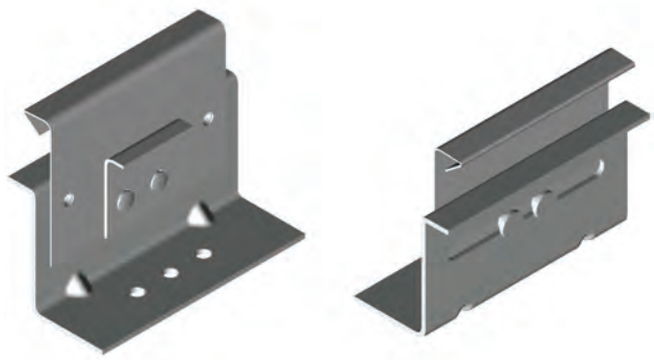
Quality Materials
MaxSEAM panels are available in 18 inch. (457.2 mm) width, 0.5mm and 0.53 mm thickness steel with a total of 150g/m^2 Zincalume coated on both sides.

It is no wonder that MaxSEAM is fast becoming the preferred roof system for a growing number of commercial, industrial and institutional buildings.

Zamil Steel's **MaxSEAM** clip

Zamil Steel's MaxSEAM distinguishes itself from the many types of standing seam roof systems available in the industry with the strong MaxSeam clip that is made from high grade steel and has long sliding steel tab which will be seamed with MaxSeam panel.

Each type of MaxSeam clip has specific features for the specific building requirement. The Sliding clip consists of a single component steel base interlocks with two components sliding steel tab. The tab is attached with the based with two rivets and slides along a slot in the clip base.



Sliding clip

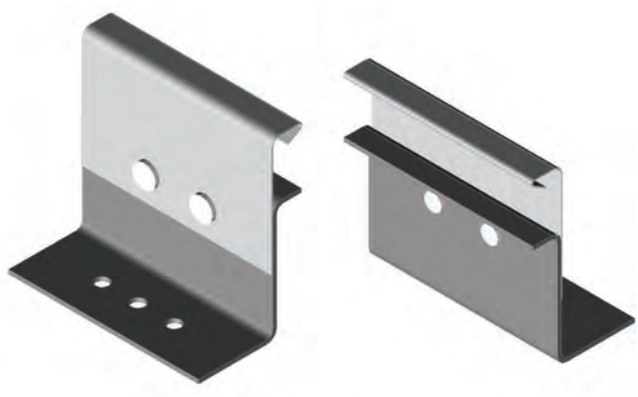
The ArtiFloat clip comprises of three main components; the base, intermediate component and sliding steel tab. ArtiFloat clip articulates and slides at the same time.

In curved roof, the binding on the clip is primarily attributed to the curved expansion / contraction of panel. Binding would restrict the standing seam from properly sliding the way it was designed, i.e., along the width of the building.

The ArtiFloat clip articulates between the base component and intermediate component of the clip thus eliminating binding.

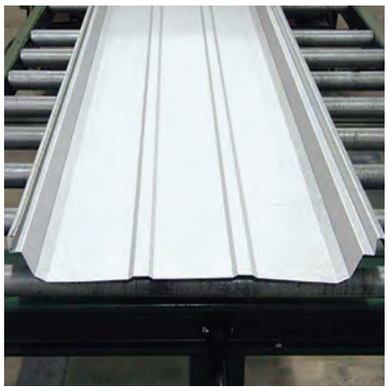
ArtiFloat clip

Fixed clip is also available for the fixed side of roof system or subject to guideline requirements.



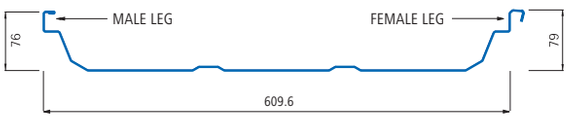
Fixed clip

panel specifications and properties

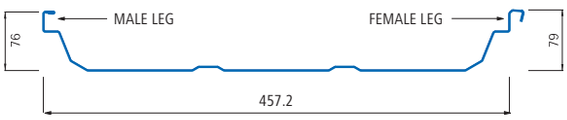


MaxSEAM Panels conform to ASTM A792M SS Grade 340 Class 2 (or equivalent) and is coated with a protective layer of Zincalume (AZM 150). The MaxSEAM steel panels are available with 18 inch. (457.2mm) wide profiles. The 18 inch. (457.2mm) wide panels are available in 0.50mm (nominal) thick bare Zincalume or 0.53mm (nominal) thick ZSP pre-painted Zincalume.

Please refer to Zamil Steel representative for extended deliveries on non-standard colors; non-standard coating systems (ZPF or PVF2) or non-standard thickness or 24 inch-609.6mm MaxSeam panel



MaxSEAM panel Cross – 24inch (609.6mm)



MaxSEAM panel Cross – 18inch (457.2mm)

Section Properties

Panel Type	Panel Nominal Metal Thickness (mm)	FY (kN/cm^2)	Nominal Weight (kg/m^2)	Top in Compression			Bottom in Compression		
				Ix (cm^4)	Sx (cm^3)	Ma (kN.m)	Ix (cm^4)	Sx (cm^3)	Ma (kN.m)
18 inch wide	0.50	34.0	4.40	5.942	1.227	0.253	2.129	0.746	0.154
24 inch wide	0.53	34.0	5.12	4.009	0.815	0.168	1.786	0.635	0.131

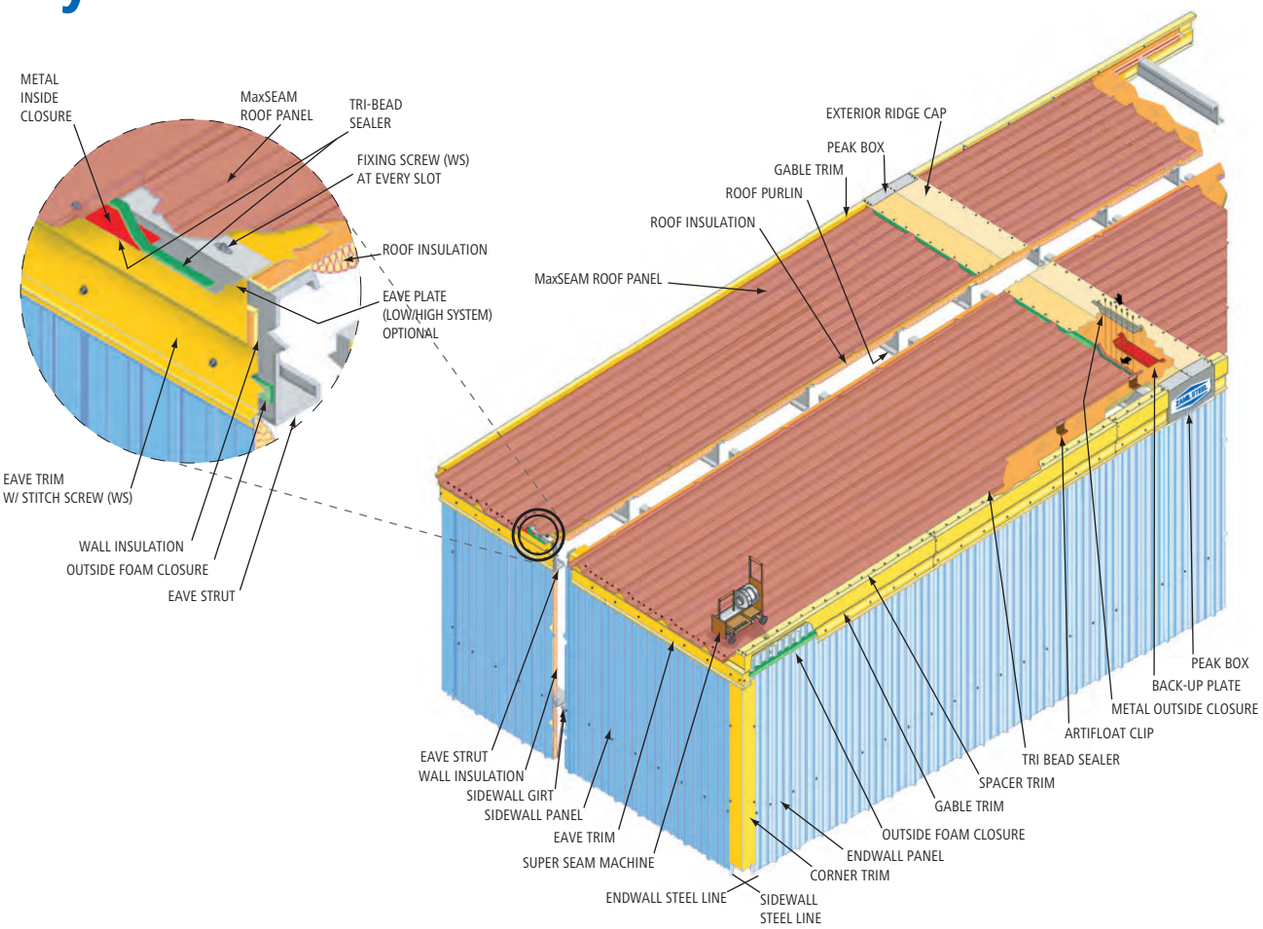
All properties are per one foot (0.3048m) of panel width.

Allowable Uniform Loads (kN/m^2)

Panel Type	Panel Nominal Metal Thick-ness (mm)	Number of Spans	Load Type	Span (m)						
				0.91	1.07	1.22	1.37	1.52	1.68	1.83
18 inch wide	0.50	1	L.L Deflection	7.96	5.84	4.49	3.56	2.88	2.37	2.03
			WP	10.64	7.79	5.97	4.70	3.81	3.18	2.67
		2	L.L Deflection	4.86	3.58	2.47	2.17	1.72	1.46	1.19
			WP	6.44	4.72	3.62	2.87	2.34	1.90	1.64
		3	L.L Deflection	6.04	4.46	3.40	2.69	2.16	1.83	1.38
			WP	8.08	5.87	4.55	3.58	2.92	2.38	2.04
24 inch wide	0.53	1	L.L Deflection	5.29	3.87	2.96	2.34	1.88	1.58	1.32
			WP	7.03	5.19	3.97	3.15	2.54	2.09	1.78
		2	L.L Deflection	4.10	3.00	2.30	1.85	1.50	1.20	1.05
			WP	5.49	4.04	3.10	2.45	2.00	1.65	1.35
		3	L.L Deflection	5.15	3.79	2.90	2.30	1.58	1.54	1.19
			WP	6.85	5.04	3.85	3.05	2.45	2.05	1.70

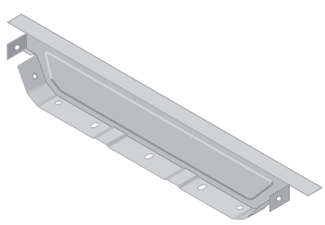
Notes:
1. Allowable loads are based in uniform span length and Fy = 34.5 kN/cm^2
2. Wind load is allowable wind load and has been increased by 33.33%
3. Deflection loads are limited by the maximum deflection of L/240 or maximum bending stress from live load.
4. Weight of panel has not been deducted from allowable loads
5. Load table values do not include web crippling requirements

MaxSEAM
system details



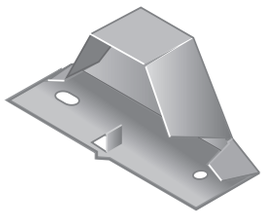
accessories

Sliding

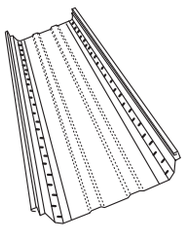


Outside Metal Closure

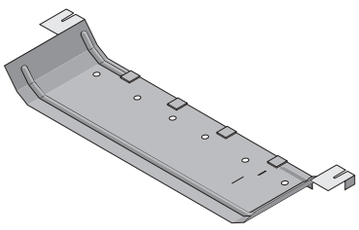
Low Eave Plate



Inside Metal Closure

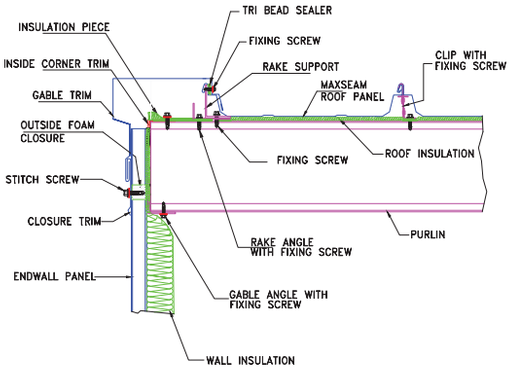


Light Transmitting Panel (Skylight)

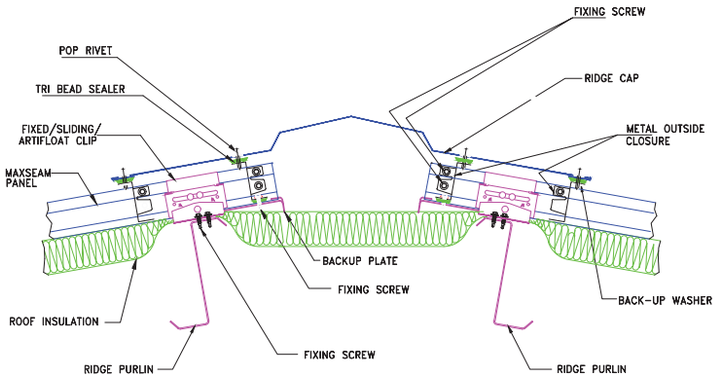


Backup Plate

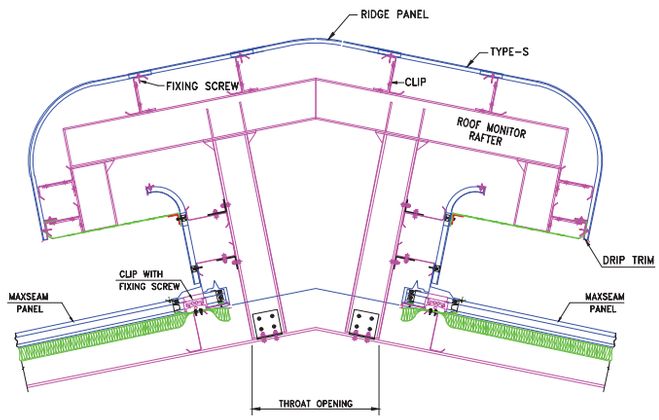
Details at gable with insulation



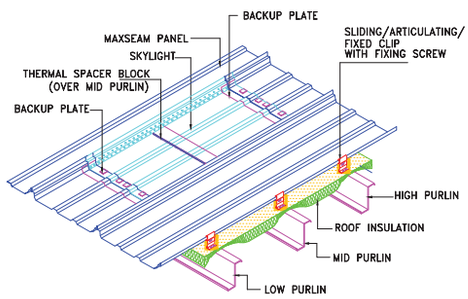
Details at ridge with insulation (floating)



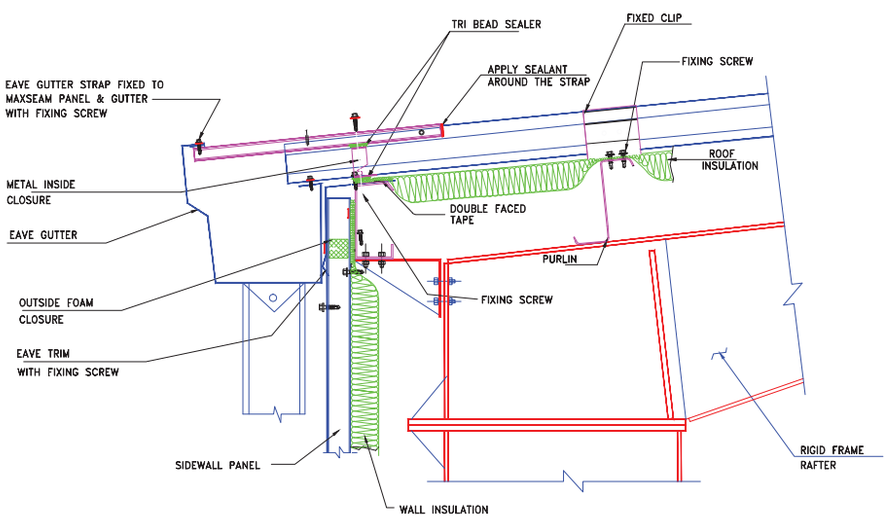
Roof monitor cross section with curved eave



Skylight details for MaxSEAM roof panel with insulation



Detail of special eave gutter (fixed) with insulation



re-roofing system
by MaxSEAM panel

Did you ever consider the time value of money over the life of your building? Depending on the level of maintenance, it is a well know fact that it is only a matter of time before the best roof of a steel building deteriorates and causes a series of problems.

Roof cladding is the very first form of protection from external factors for your well invested building structure and its content. If your building had been erected for a long time, we recommend you to have a check-up survey of your roofing system.

Delaying the inevitable will lead to further deterioration and possible consequential damage. To have a peace of mind in future years to come, do not hesitate to talk to our roofing experts to enjoy ingenious cost effective MaxSEAM re-roofing solution and alleviate more unnecessary miscellaneous cost.

MaxSEAM Re-roofing System

For supreme weather tightness and long-term performance, customers can opt for the entire re-roofing of the building with our MaxSEAM panels. This solution allows for the installation of our MaxSEAM system over an existing roof.

MaxSEAM monolithic roofing possesses unique features to assure adequate drainage from rain and it is also designed to handle the damaging effect of thermal movement by giving the entire roof a "floating" action.

With MaxSEAM re-roofing system, the advantages are:

- **No Tear-off**

Owing to the extremely light weight of the system, MaxSEAM roofing system can be installed right over the existing roofs, thus eliminating the costly and time-consuming tear-offs.

- **Minimum Downtime**

Without having to tear-off the existing roof, the impact to the operation due to re-roofing is minimized, hence reducing the downtime. Furthermore, with zero exposure to the interior, the threat of damage to the building's interior and machineries is also significantly minimized.

- **Desirable Slope-to-drain**

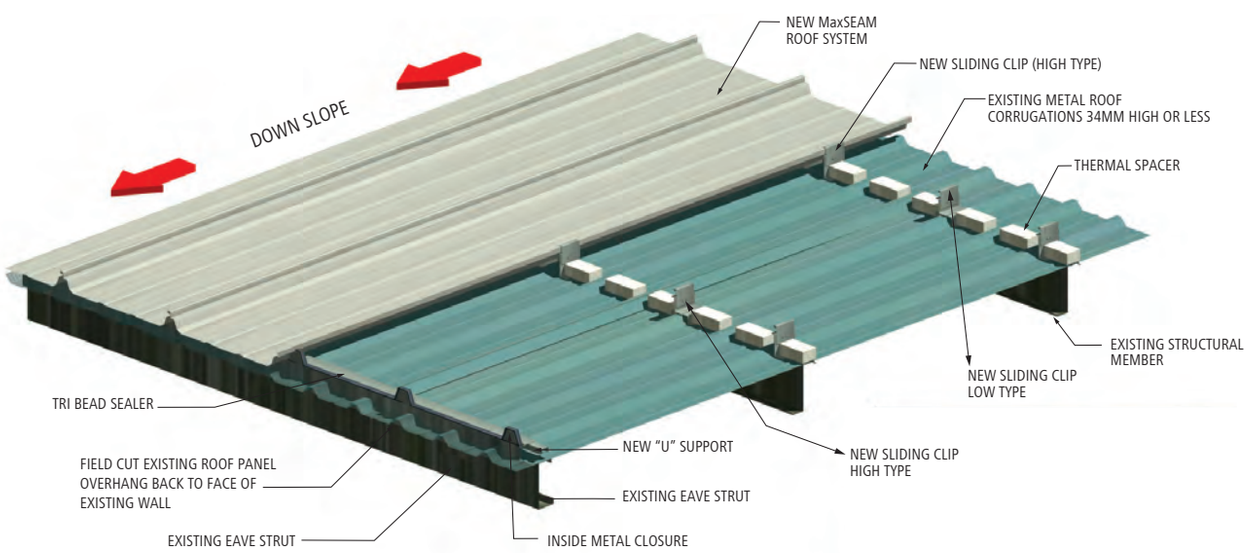
Re-roofing with MaxSEAM system can improve the roof gradient which is necessary for drainage. Moreover, MaxSEAM re-roofing also provides a low-slope solution to existing flat built up roofs. Introduction of slope to the flat roof allows re-routing of drainage to eliminate troublesome internal drains.

- **Savings**

Time and money.

All other benefits of MaxSEAM Roofing System.

Please contact Zamil Steel for MaxSEAM Re-roofing System!



MaxSEAM Roof system over existing through fastened panel

installation
of MaxSEAM

MaxSEAM roof system is installed on site using a field seamer, SuperSEAMER.

After pre-seaming of the start of the panels using a Seaming hand tool, the SuperSEAMER is then fitted on to the pre-seamed panel, adjusted and locked, before the rollers are activated to start the complete electric seaming process. With the simple quick release handle, a very short time is required to move the SuperSEAMER from one seam to another. Weathertight 360 deg. seams are made without affecting the panel paint finish.

Zamil Steel has appointed Authorized Installers of MaxSEAM (AIMs) among its Certified Builders who are adequately trained; experienced and possess the necessary tools to install the MaxSEAM roof system. Zamil Steel strongly recommends that all its MaxSEAM roof systems be installed only by one of its AIMs. Contact Zamil Steel for the latest list of AIMs in your region.

SuperSEAMER

Using the Zamil Steel SuperSEAMER machine, the side laps of adjacent panels are seamed together through a mechanical action, creating a 360 deg. double lock seam, which has a machine applied sealant to ensure a secure and weather tight leak proof roof system.

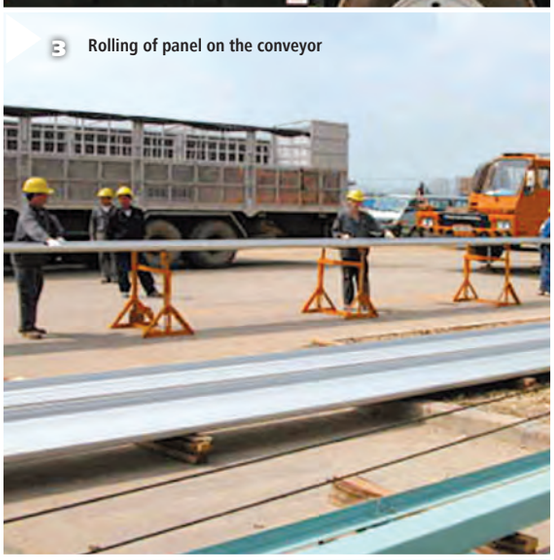
Mobile Roll Former

The MaxSEAM mobile roll former is available if endlaps are not preferred in the roofing system. The roll former weighs approximately 3.5 MT and can be transported to most jobsite via a container. With a roll forming capacity of between 12 – 15m per minute, MaxSEAM panels can be roll formed on site as a continuous panel for up to 90m.

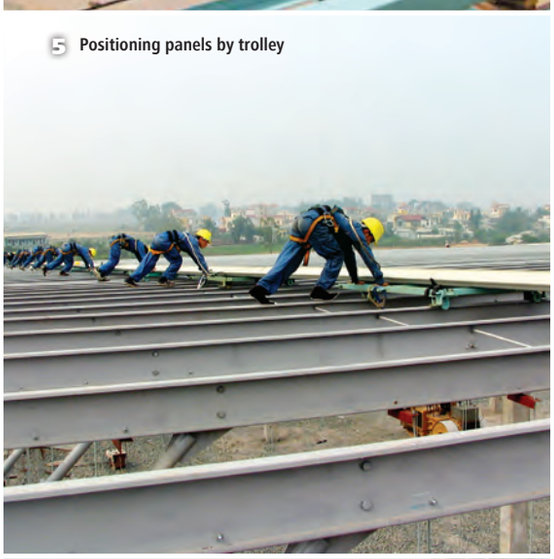
MaxSEAM **erection sequence**

1 Mobilizing Mobile Roll Former on site

2 Setting coil on the uncoiler


3 Rolling of panel on the conveyor


4 Lifting of panels with two cranes


5 Positioning panels by trolley


6 Laying of insulation and MaxSEAM panel

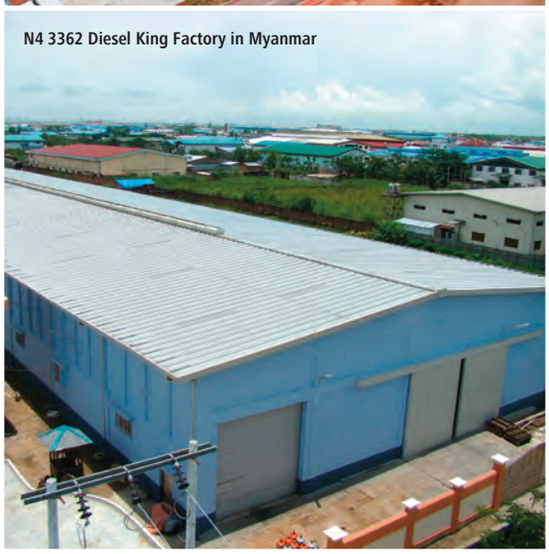

7 Seaming process using SuperSEAMER


8 Completed MaxSEAM roofing system

MaxSEAM **roofing system projects**

L1 3508 Honda VN Factory, Vinh Phuc Province, Vietnam


L4 2584 Yazaki Factory in Hai Phong City, Vietnam


N4 3362 Diesel King Factory in Myanmar


L1 2984 Canon Factory in Tien Son, Bac Ninh, Vietnam


L1 3593 Foxconn Factory in Que Vo, Bac Ninh Province, Vietnam


M1 1875 NPK Fertilizer Factory in Malaysia

L3 2354 Sanyo Electric Factory in Dong Nai Province, Vietnam


M3 3076 Singapore Airshow Exhibition Centre in Singapore

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total steel building solutions

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