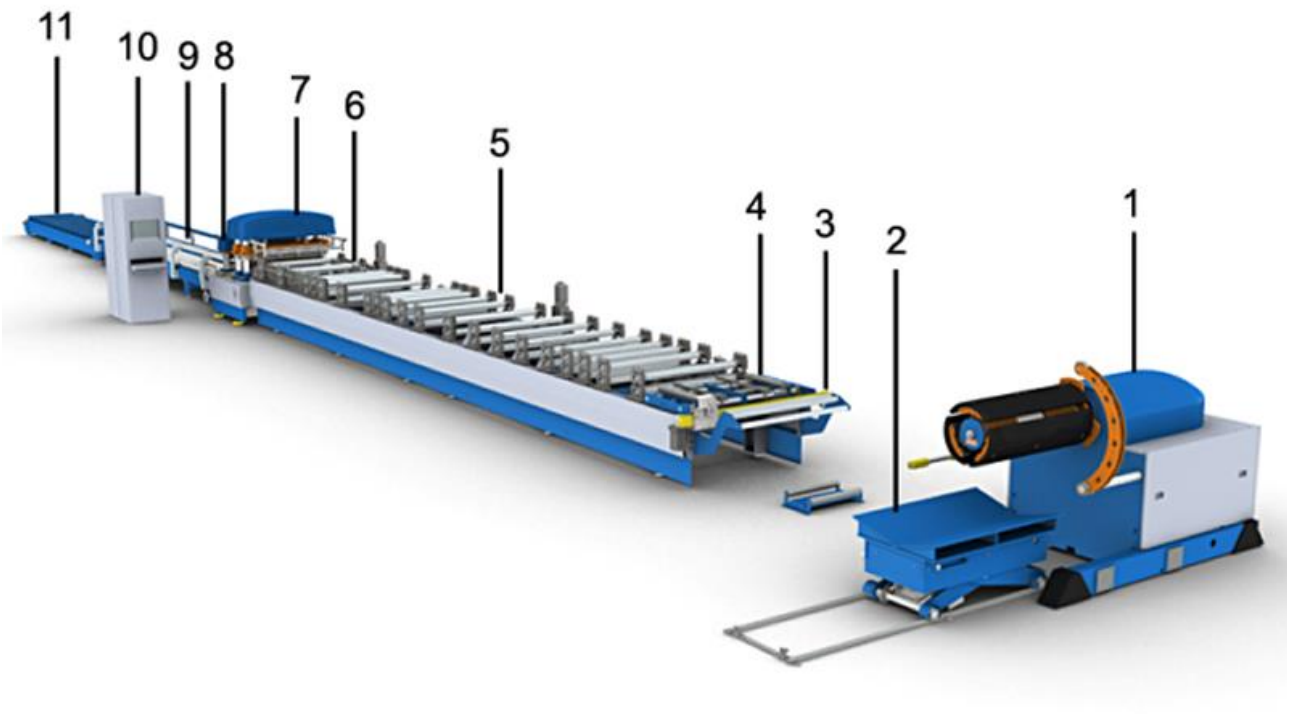
Technical Plan for Twin Servo Tile sheet line TE 23/1100

SPECIFICATION:

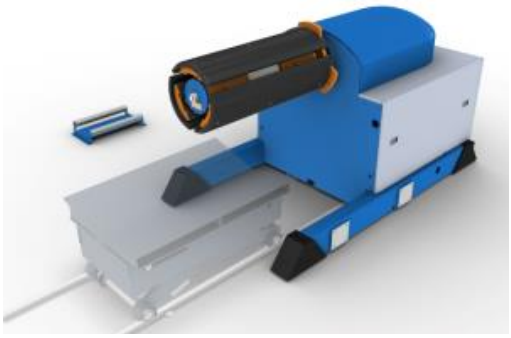


Main parts		Technical information	
1.	Decoiler	Production speed	**8/10/14m/min**
2.	Coil car	Profile	T23/1100 (Monterey)
3.	Disc cutter	Raw material	0,40-0,55 mm / 1250 mm
4.	Feeding table	Length	Approx. 27m (29m for Twin)
5.	Roll forming section		
6.	Hydraulic unit		
7.	Single press (or Twin press)		
8.			
9.	Stacking table		
10.	Electric cabin and AMS operator's console		

RAW MATERIAL

- the line can profile the following raw materials:
- material thickness without coating 0,40 - 0,55 mm coated steel sheet, coatings such as acrylic, polyester, matt polyester, plastisol, pural or PVF 2 80/20
- raw material yield strength (Rp0,2) 280-360 N/mm2 (after coating, tested according to EN 10147). Rp0,2/Rm relation of the material shall be <0,9 and Ae shall be <5%
- raw material width according to the profile, max 1250 mm

ELECTRICAL DECOILER



- frequency inverter drive, axle can be rotated in both direction, silent function
- hydraulic expansion / contraction of the axle, hydraulics functions only when needed (in expansion / contraction or when operating coil car (option))
- max decoiling speed 40 m/min
- in the automatic function the size of a loop is controlled by ultra sound sensor
- three wings which facilitates coil handling, wedge mechanism
- supported on one side
- coil dimensions:

inner diameter	480 - 620 mm
width	max 1250 mm
weight	max 10 tons

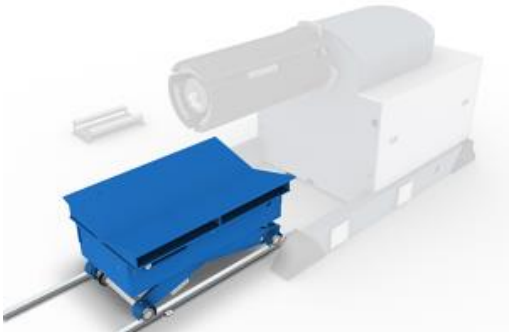
- decoiler dimensions:

length	3,2 m
width	1,3 m
height	1,6 m

- possible decoiler options:
  - hydraulic holding arm
  - sideways shift by rails
  - two-sided operation

COIL CAR

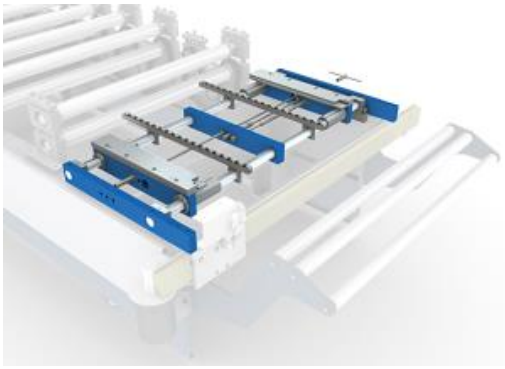
- facilitates coil handling and loading
- lifting by a powerful scissors mechanism
- movement on rails by hydraulic motor
- manual control by the control panel of the decoiler



ROLLFORMING MACHINE:

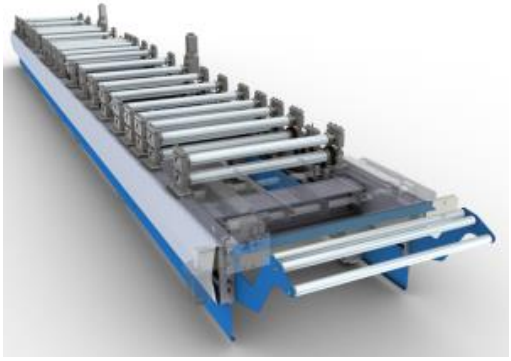
- FEEDING TABLE

- guides sheet metal from the decoiler into the roll forming section through two guides, thus sideways adjustment of the decoiler is not necessary
- quick sideways adjustment and width adjustment of the sheet
- guides move easily on linear guide bars
- rollers in guides for protection of reel edge



- ROLLFORMING SECTION

- profiles a longitudinal corrugated shape
- stable welded frame made of robust steel profile
- profiling stations are mounted on the accurately machined upper surface of frame beams



- consists of 18 stands
- shafts are mounted in bearings with high quality ball bearings installed in bearing blocks with adjustment to top roll shaft
- fixed lower shafts which are driving, upper shafts are adjustable and freely rotating
- own gear motors in both frame blocks
- bearing block of upper shaft moves on linear guide bars with a help of an

adjusting screw making it easy to adjust the gap of the shafts

- profiling rolls/shafts are machined with CNC machine tool to reach perfect quality of surface and accuracy of measurement
- shafts and profile rolls are manufactured of steel S355
- controlled line acceleration and precise, quick positioning for pressing and cutting
- transmission by maintenance free duplex roller chain

- HYDRAULIC PRESS

- makes a transverse step to corrugated sheet metal coming from the roll former either in height of 14 mm or 20 mm (change with additional piece in pressing tool)
- 2-column press construction
- stable welded frame, designed for continuous heavy use
- the press is electrically controlled and hydraulically operated
- durable pressing tool accurately manufactured according to the profile by CNC machine centre
- adjustable hydraulic sheet metal holding beams in pressing tool
- connected with the hydraulic press there is an equipment that spreads coating-protecting liquid to the pressing place
- profiling speed in TE model varies between 0-8 m/min and reaches 8 m/min when producing 6000 mm sheets with 14 mm step

(OPTION) HYDRAULIC PRESS FOR **TWIN** ROLLFORMING MACHINE

- *hydraulic press consists of two identical, independently operating presses making two transverse steps successively to corrugated sheet metal coming from the roll former, either in height of 14 mm or 20 mm (changes with additional piece in pressing tool and by adjusting the height of the second press)*

- *stable welded frame, designed for continuous heavy use*
- *second press is mounted on linear guides, tile length can easily be adjusted by hand wheel. Press height can be adjusted by a hydraulic jack enabling different step height.*
- *the press is electrically controlled and hydraulically operated*
    - *Servo controller is taking care of servo valve which enables fast and smooth movement of pressing.*
    - *measuring sensors in press frame gives feedback information to servo controller about the position of pressing tools*
- *durable pressing tools accurately manufactured according to the profile by CNC machine centre*
- *adjustable hydraulic sheet metal holding beams in pressing tool*
- *connected to the hydraulic press there is an equipment that spreads coating-protecting liquid to the pressing place*
- *profiling speed in Twin model is varies between 0 - 14 m/min and reaches 14m/min when driving 5500mm sheets with 14mm step height.*
- *central lubricating system which automatically lubricates the twenty six required objects in the press and pressing tool, increases service life of the press*

- DIMENSIONS OF THE ROLLFORMING MACHINE:
    - length 13,5 m (15,5m for Twin)
    - width 2,0 m
    - height 1,1 m

- CUTTERS
    - roll former is equipped with hydraulic guillotine type form cutter as well as with a disc cutter for automatic rear cut
    - blades made of depth hardened tool steel to be long-lasting and sharpened several times

- in Twin tile line the form cutter is mounted on linear guides for adjusting the length of front edge of the profile, adjustment by hand wheel

DISC CUTTER

- situated between decoiler and roll forming machine, used for example when changing raw material coil to another
- raw material saving
- the control unit calculates automatically the right position of the last cut. The electric motor moves the cutter on linear guide bars and the rear cut is done automatically.
- blades made of hardened tool steel can be sharpened several times

HYDRAULICS

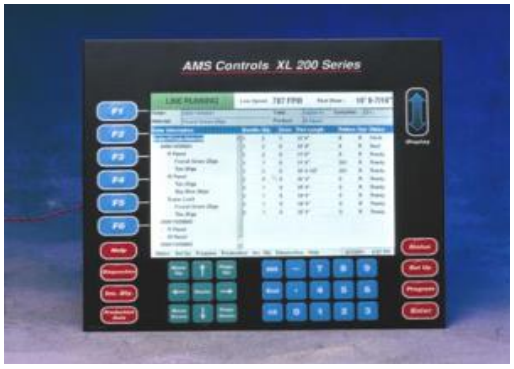
- hydraulic unit consists of 200 l tank, axial piston pump as well as oil cooling which operates as its own system
- hydraulic unit is integrated inside the roll forming machine
- hydraulic system is equipped with pressure accumulator balancing the load

CONTROL

- the line is equipped with AMS control unit developed according to the experience of roll forming line operators
- allows automatic control but the line can also be controlled manually, if necessary
- easy line control, the whole order can be programmed in one go. Order programming is possible also during the operation; several orders can be saved in memory.
- unlike general-purpose controllers, AMS controls were designed specifically for the needs of the roll forming industry.
- the XL200 has Speed Compensation - an AMS exclusive. It continually monitors position, speed, and velocity and automatically compensates for any changes. The result is significantly better accuracy at much higher speeds.
- the machine equipped with AMS control doesn't press or cut sheet metal if it

hasn't placed itself exactly in the right place. The unit controls that ready plates are manufactured according to required tolerances.

- easy control of different peripheral equipment by built in PLC
- the control system is equipped with extra frequency inverter (2,2kW) for the Customer's existing conveyor.



STACKING TABLE

- receives the ready sheets shaped by the roll forming machine and stacks them neatly and gently in bundles on the belt conveyor
- consists of guides which direct the profiled sheet along the rods placed longitudinally
- when the cutter has cut off the sheet, the rods move apart and the sheet falls on the belt conveyor under the rods
- pneumatically controlled pusher pushes the sheet towards the press in order to pack the sheets tightly
- fully automatic operation by control unit
- stacking is done gently with only a short drop, coating of the sheet remains undamaged
- receiving mechanism is mounted on belt conveyor with drum motor ensuring quiet and material saving operation
- dimensions of automatically stacked sheets 1 - 8 m
- dimensions of the stacking table: length 8,0 m

width	1,5 m
height	1,5 m
capacity of the conveyor	500 kg/m

POWER SUPPLY 380/400V 50/60HZ REQUIRED FOR THE LINE

The Seller reserves the right to technical changes owing to normal product development.

The lowest operating temperature for the line is +5ºC.

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Allmac owns IPRs (Intellectual Property Rights) from Formia. Formia is an European company (Finland) which is a professional roll-forming-machine manufacturer, its business starts from 1980s, this company has provided thousands of the high-quality roll-forming-machines to European market. its most important machine is the high-speed tile line.