Royle Systems Group

Building Wire Insulation Line

Specifications:

Applications:	Insulation of Building Wires
Compounds:	PVC, Nylon
Conductor Range:	14 - 22 AWG
Conductor Diameter:	0.031” - 0.073” - stranded 0.025” - 0.064” - solid
PVC Insulation Thicness:	0.015” - 0.030”
Nylon Jacket Thickness:	0.004” - 0.006”
Product Diameter Range:	0.055” - 0.133”
Line Speed, Max:	5000 fpm, system capability
Payoff Reel Sizes:	22” - 30”
Takeup Reel Sizes:	36” maximum

Components:

- Driven Dual Flyer Payoff
- 120mm extruder with multi-purpose stockscrew
- 80mm extruder with multi-purpose stockscrew
- Cooling Trough
- Belt Wrap Capstan
- autoLine Control System

Driven Dual Flyer Payoff

One dual flyer payoff to continuously pay off solid or stranded constructions of 14 - 22 AWG. The units can accommodate reels from 16”-30” diameter and weighing up to 1250 lbs. The dual cones have double spun steel hoods with continuous contours to minimize wire tension, minimize slot effect, and keep tension constant from reel cap to hood exit. Semi-rigid foam, bonded to sheet metal and covered with rigid fiberglass acoustic installation.

Innovative design of motorized reel caps isolates bearings and drives from reel weight. Driven caps with tension brushes provide smooth, even, manually adjustable tension control throughout the line speed range.

Unit includes:

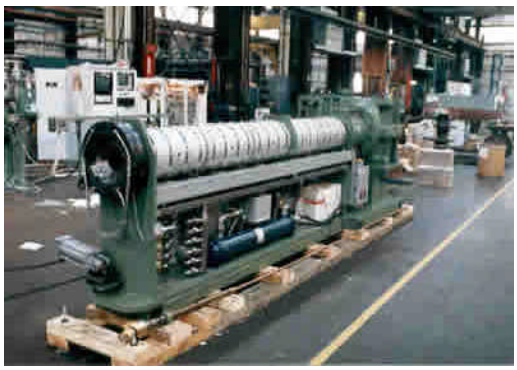
- One double hood
- Two electric driven lift trucks with arbors
- Two driven reel caps with tension brush units for 30 inch reels
- Two adapters for 5 inch reel bores

Specifications:

Reel Diameter Range: 16”-30”

120 mm Alurobe PVC Extruder

One Royle Gen2000 Alurobe heavy-duty extruder complete with:



Fully enclosed water-cooled gear housing having self-lubricated reduction drive, lubricating oil fed by gravity to integral roller thrust bearing mounted in its own housing to isolate extrusion pressure and torque overload from gear reduction drive, Spacer ring and water-cooled feed section (equipped with safety guard), Cyl-

inder with bimetallic lining and insulating jacket, Alurobe heating/cooling system consisting of cast aluminum heaters with stainless housing and integral passages for cooling and internal high-temperature resistance heaters, prepiped to individual solenoid actuated valve(s) to control flow of cooling medium, temperature sensing thermocouples for each control zone and system automatically controlled remotely, Water cooling pipes and rotary joint for stockscrew.
All above assembled and mounted on heavy-duty fabricated steel base, prewired, prepiped, and completely shrouded.

Specifications:

Model:	120mm 24:1 L/D Alurobe
Heating/cooling Zone:	5
L/D Ratio:	24:1
Reducer Model #:	U7.1
Maximum Screw Speed:	100 RPM
Heater Wattage(kW/zone):	12
Estimated Output:	1,200 lbs/hour for PVC @ SG 1.35

80 mm Alufin Nylon Extruder

One Royle Gen2000 Alufin heavy-duty extruder complete with:

Fully enclosed water-cooled gear housing having self-lubricated reduction drive, lubricating oil fed by gravity to integral roller thrust bearing mounted in its own housing to isolate extrusion pressure and torque overload from gear reduction drive, spacer ring and water-cooled feed section (equipped with safety guard), Cylinder with bimetallic lining and insulating jacket, Alufin heating/cooling system consisting of cast aluminum heaters with stainless housing for increased cooling and internal high-temperature resistance heaters, high-velocity air cooling by motorized blowers connected to plenum chamber and air duct assembly, temperature sensing thermocouples for each control zone and system automatically controlled remotely, water cooling pipes and rotary joint for stockscrew.
All above assembled and mounted on heavy-duty fabricated steel base, prewired, prepiped, and completely shrouded.

Specifications:

Model:	80mm 24:1 L/D Alufin
Heating/cooling Zone:	5
L/D Ratio:	24:1
Reducer Model #:	U5.0
Maximum Screw Speed:	100 RPM
Heater Wattage (kW/zone):	8
Estimated Output:	275 lbs/hour for Nylon @ SG 1.1

Retractable Cooling Trough

Stationary Trough System

Three single pass, heavy gauge, stainless steel cooling trough, 10' long with baffles, rigid end flanges, and vertically adjustable support structure. Trough includes 'V' section inserts and nozzles for spray cooling of product - designed to minimize drag and maximize cooling efficiency. Complete trough is covered and is equipped with a drain box.

Specifications:

Size:	4"
Length:	30'
Cooling Medium:	Spray

Multipass Cooling System

One driven multipass cooling system with spray cooling to maximize cooling efficiency and minimize drag within the system. The system is 20' long and features low inertia sheaves and bearings for low wire tensions. The assembly contains (20) precision machined aluminum sheaves with protective hard coating. Two sheave assemblies are mounted external to the wire bath enclosure by means of rigid steel bearing block fabrications to minimize vibration. All internal parts are corrosive resistant and enclosed within the fabricated stainless steel housing. The housing has a large water storage tank located directly under the wire bath section of the unit. Wire cooling is accomplished by individual spray nozzles mounted above and below the wire path between the end sheave packs. Four

front doors are conveniently hinged out of the way for easy wire threading. Each door is sealed to ensure that water does not leak during operation and the doors are interlocked with the safety circuit to prevent line operation when open.

The wire cooling bath also incorporates a recirculation water system with a main water filter and regulator mounted external of the wire bath for easy maintenance and control. A pump circulates the water from the holding tank to the spray nozzle manifold. The holding tank also has a water level control to maintain proper water volume in the reservoir.

The driven sheave assembly features a 3 HP AC motor and drive (described in the autoLine section Item 120) to ensure tight speed control over full operating speed range and smooth acceleration and deceleration during ramp up and ramp down.

Mounted on the top of the wire cooling bath is a stainless steel air wiper housing consisting of a (2) pulley "Z" configuration wire drying system designed to centrifugally throw the water off the wire prior to entering the drying station.

Self-contained air wiper, designed specifically for building wire applications. Includes tooling for 14 AWG - 22 AWG THHN.

Specifications:

Sheave Diameter:	12"
Length:	20'
Number of Sheaves:	10/10
Sheave Groove:	0.250"
Cooling Medium:	Spray
Effective Cooling Length:	400'

Belt Wrap Capstan

One belt wrap capstan with main support bracket for idler sheaves having one sheave positioned by means of a pneumatic cylinder to provide belt tension adjustment. Features a driven mass balanced wheel, rubber coated contact surface, with guide flanges, which is directly mounted via rugged pillow block bearings on the output

shaft. All electrical and pneumatic devices are wired and piped to appropriate locations for convenient service connections. All above are mounted on a heavy duty fabricated steel base with protective shrouding to cover all moving parts.

Specifications:

Capstan Diameter:	18”
Motor:	7.5 HP AC
Orientation:	Vertical

autoLine Level V Control System

One autoLine control system for total control and synchronization of control parameters with full integration between all elements and recipe capability for each product. The system utilizes a color touchscreen for display, annunciation and monitoring of all critical parameters.
The autoLine Level V control system consists of five main components:

Operator Interface Terminal (OIT) &
Computer System
autoLine Level V system HMI package
Programmable logic controller (PLC)
Temperature Control System
DC Drive System

Level V OIT and Computer System

The system comes complete with 19” rack mounted touch screen interface and industrial computer as specified below:

The OIT features a graphical user interface (GUI) operating from a Windows NT environment with color display screens, pre-configured to provide the operator with Real-Time monitoring of process variables. All of these screens may be accessed by the operator to obtain information on a piece of equipment, or for modification of system parameters.

An uninterruptable power supply (UPS) is included with the Level V System. The UPS allows for a proper com-

puter shut down in the event of a power failure in order to save the system databases. The UPS also prevents premature computer shutdowns in the event of a power "brown out".

Level V HMI

The Royle Level V HMI has been fully developed and is utilized in many applications throughout the world. The development software package is Windows NT based and can be readily networked to a customer's Windows NT based internal computer system. A proposed package is a full Run Time version with an unlimited database.

The autoLine Level V system HMI package features:

- Real-Time color graphics
- Recipe editor/loader/generator
- Custom report generator
- Real-Time and historical trending
- Print Spooler
- File Manager
- Alarm and event supervisor
- Relational database historian for dBase
- Real time data logger for historian
- SPC (Optional)

The following displays will be supplied:

- Process overview display
- Temperature overview display
- Temperature zone configuration display
- Alarm display/Historian
- Recipe editor/loader/generator display
- System setup & Diagnostics display
- Historical/Real Time Trending
  (8 Variables on Screen)
- Statistical Process Data

During the initial production trials, parameters for the successful operating runs will be recorded against product code. These parameters can then be re-loaded at any time that the same product is run as part of the set-up procedure for the line which will automatically reset all the line parameters to correspond to the successful settings of