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Multi-layer Automotive Pipe  
High-speed Extrusion Technology

# DEKUMA

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**DEKUMA**  
German Technology . Chinese Creation



## About Dekuma

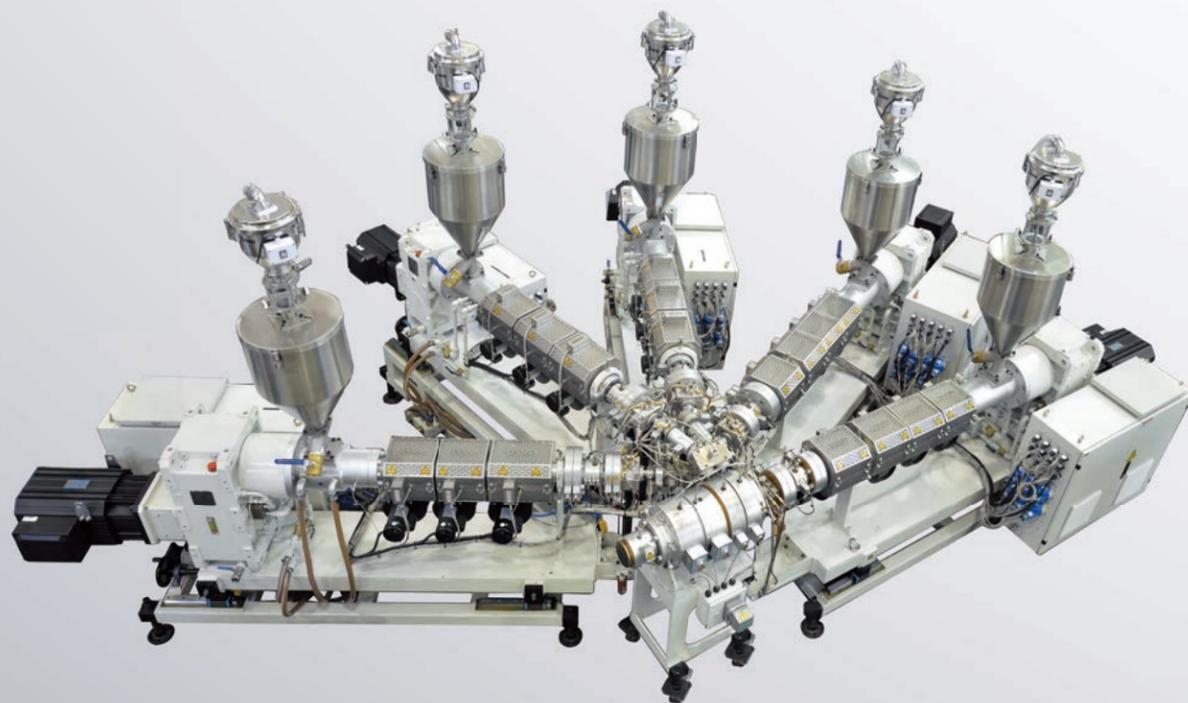
Dekuma, founded in 2004, was a joint venture between Cosmos Machinery Ltd. (a wholly-owned subsidiary of Cosmos Machinery Ltd., a Hong Kong public-listed company) and German Dekuma GmbH., specializing in the research, development, manufacturing, sales and after-sales of plastic pipe extrusion lines and rubber injection moulding machines.

Combining Cosmos group's strong production and processing capacity and the professional technology of German engineers, Dekuma commits to producing high-end rubber and plastic processing equipment and becoming the leading high-end rubber and plastic equipment manufacturer in China.

In 2011, by cooperation with a well-known multinational enterprises, Dekuma developed and manufactured China's first multi-layer nylon composite pipe extrusion line. After continuous improvement, Dekuma has developed a mature turn-key solution, with stable production speed reaches 40-80m/min. Production efficiency and stability are competitive to those of German and Swiss equipment. This technology reaches an international leading level and wins the Chinese National Science and Technology Progress Award. Now Dekuma mono/multi-layer nylon pipe extrusion lines have been successfully running in end-users at home and abroad.



## Dekuma multilayer extruder and die head



## Nylon (PA) multilayer composite pipe

Nylon (PA) multi-layer composite pipe of automotive fuel system has been a kind of light weight, high performance and environmental friendly pipeline product widely used in automobile fuel system in the world recently. Automotive nylon pipe, mainly used for oil supply, oil return, air brake and glass cleaning etc.

It has a variety of single-layer, two-layer, three-layer, four-layer and five-layer pipes, and the outer diameter can be from 6mm to 32mm or other specifications as customers require.

PA multi-layer composite pipe can effectively reduce the environmental pollution caused by automotive emissions and meet higher environmental protection requirements. At the same time, multi-layer composite pipe has excellent permeability resistance, which can meet the requirements of the EU emission standards stage V and The Chinese VI Emission Standards (The sixth stage emission standards of vehicles in China)



The upcoming Stage VI is 30% stricter than the Stage V.



Automobile pipeline example

## Nylon (PA) multilayer composite pipe common structure

Model 1



Model 2



Model 3

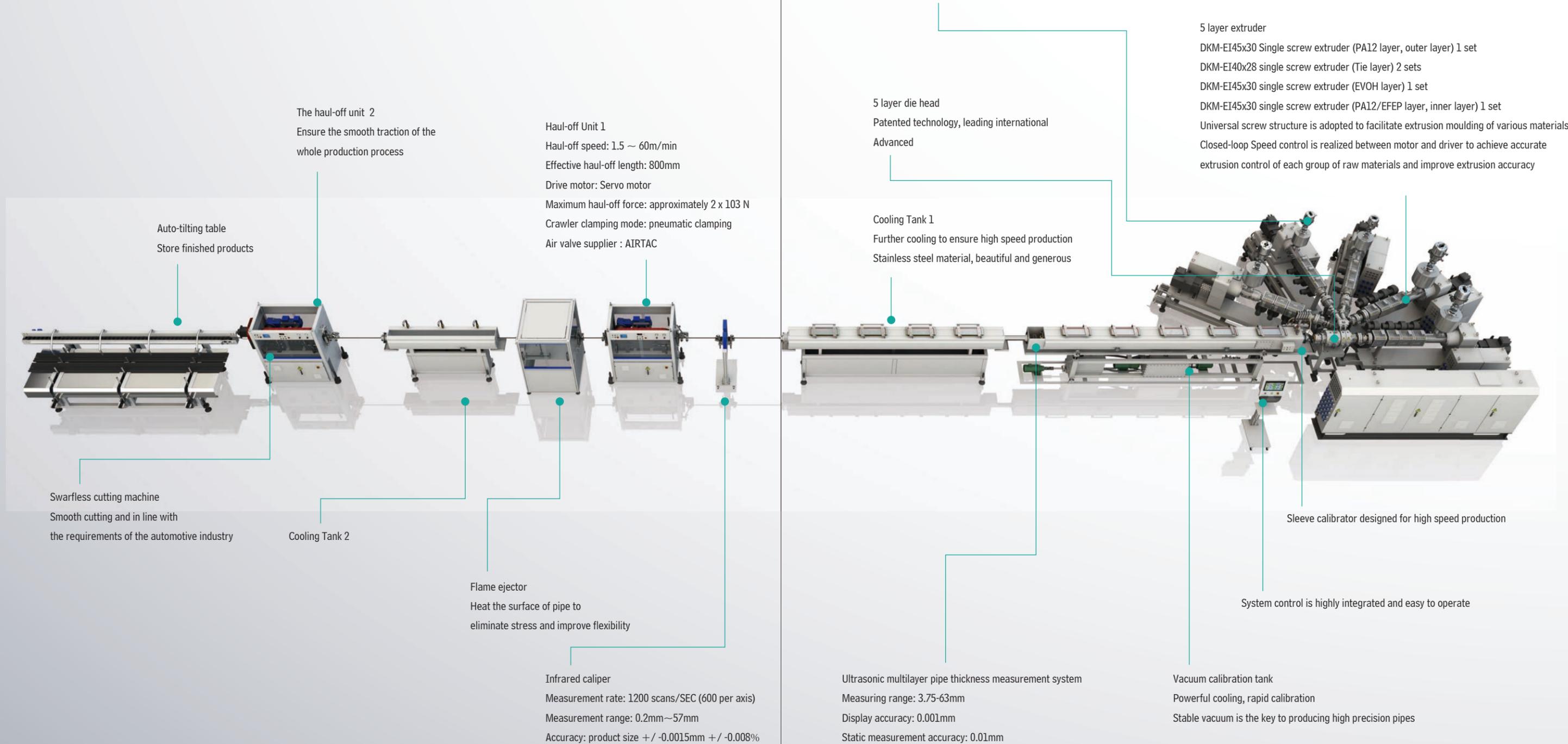


inner layer → outer layer , Total Thickness 1mm, Tolerance ± 0.1mm

## Multilayer nylon pipe cases



## Technical perspective, Dekuma multilayer nylon composite pipe extrusion line



## Test Reports

### Commissioning tensile performance test results

Test Item	Technical standard requirements	Testing result
Vertical stretching	Elongation at break: $\geq 170\%$	285%,301%,280%
	Break strength: $\geq 24\text{N/mm}^2$	25.63N/mm <sup>2</sup> ,25.72N/mm <sup>2</sup> ,25.45N/mm <sup>2</sup>
Lateral stretching	Elongation at break: $\geq 170\%$	425%,417%,429%
	Break strength: $\geq 25\text{N/mm}^2$	22.82N/mm <sup>2</sup> ,22.23N/mm <sup>2</sup> ,26.59N/mm <sup>2</sup>

### Sample Slice Analysis



Item	Nylon tube	Item Model	PB550A/B 8mm
date of manufacture	2012.11.30	extrusion speed	60M/min
measuring tool	Quick vision	Item color	white

Standard	upper deviation	lower deviation	point0	point1	point2	point3
0.45	0.03	0.03	0.468	0.436	0.433	0.465
0.15	0.02	0.02	0.147	0.152	0.145	0.144
0.05	0.02	0.02	0.053	0.05	0.049	0.053
0.05	0.02	0.02	0.049	0.046	0.055	0.063
0.3	0.03	0.03	0.302	0.32	0.33	0.282

## Patents and awards

The success of Dekuma nylon (PA) multilayer composite pipe extrusion line is the result of many years of technical accumulation

NO.	Honors and certificates	Name of issuing authority	Time
1	The die head of five-layer oxygen resistance composite pipe for PE-RT floor heating won the 「RONGGE technical innovation award」	RONGGE industrial media co., LTD.	2012.6
2	"CNC multi-layer pipe extrusion line" has been identified as Dongguan's first (set) key technical equipment	Dongguan science and technology bureau	2017.1
3	"CNC multi-layer plastic composite pipe extrusion line" won the provincial high-tech products in 2017	Dongguan science and technology bureau	2017.12
4	"Development and industrialization of plastic pipe extrusion CNC system and equipment" passed the 2015 Dongguan industrial breakthrough (CNC generation) project acceptance	Dongguan science and technology bureau	2018.2.27
5	Five-layer co-extrusion machine (invention patent)	SIPO	2016.8.5
6	A five-layer co-extrusion machine (utility model patent)	SIPO	2016.8.5
7	Vacuum sizing seat (invention patent)	SIPO	2016.8.9
8	A vacuum sizing seat (utility model patent)	SIPO	2016.8.9

### In 2018, Dekuma was selected as the most favorite extruder brand by chinese users



Reference from: www.pt.vogel.com.cn

