

# Reduce energy costs with the M generation.

Operators can achieve **ENERGY SAVINGS OF UP TO 30%** with M-generation makers connected to a central cooling unit. This reduces costs and makes an important contribution to achieving greater sustainability in cigarette production.

The difference is immediately visible: where cooling units once hummed alongside the makers, slim and discrete water pipes now snake around the machine connecting it to a central cooling unit. This is compatible with all Hauni's M-generation makers. The warm water from the machines passes back through a ring line to the central recooling unit. From here it is returned cool to the makers.

Standard makers with separate cooling units transfer their heat to the air in the production hall, which itself has already been expensively cooled. This warmed air has to be extracted and cooled again using the hall's air conditioning system. It is the only way to maintain constant production conditions in the factory – and these are vital for maintaining the consistently high quality of the products. The central cooling unit is significantly more energy efficient than the standard method of individual cooling and also offers other advantages such as compact size and a reduction in noise.

In order to calculate the actual difference in energy consumption, Hauni conducted a study in partnership with the company Voith from Bayreuth, Germany. To do this, two scenarios using real production conditions were calculated and compared with each other. Scenario 1 (see table right) assumed a production hall, in which 14 PROTOS 90 makers with individual cooling units were in use. Scenario 2 was based on a hall of the same size but with 12 water-cooled PROTOS-M5 machines connected to a central cooling unit. The results are astonishing: the annual energy consumption of the hall's air conditioning system was 1.44 million kilowatt hours less than that of the conventional machines used in Scenario 1. This represents a saving of approx. 30%. Assuming an electricity price of EUR 0.11 per kilowatt hour, the result is an annual cost saving of EUR 158,000.

The environment also benefits. Our modern, water-cooled machines cut climate-damaging carbon dioxide emissions by 821 tonnes per year compared to Scenario 1 with conventional machines.

## Environmental benefits.

*Hauni's modern, water-cooled machines cut climate-damaging carbon dioxide emissions by 821 tonnes per year compared with conventional machines.*

rio 1 with conventional machines. And this despite the fact that Scenario 2 produces approx. 1.1 billion cigarettes per year more than the 14 PROTOS 90 machines.

Saving energy is an area that is gaining ever greater importance in the tobacco sector. As experts forecast that energy costs will continue to rise, more efficient machines will assume an ever more central role in ensuring more sustainable production. If interested, Hauni and Voith will gladly provide assistance for customer-specific scenarios.

"In the area of saving energy, we are not following a trend. Energy conservation has always been a priority for us," says Dirk Kronenberg, Sustainability Manager at Hauni. Reducing energy consumption was a development goal from the earliest planning phases of the M-generation makers. The connection for a central cooling unit comes as standard for PROTOS-M5 and M8, KDF-M, MERLIN and AF-KDF 4.

And other areas of production are also in the focus of measures to save energy at Hauni. "Compressed air is one topic of discussion," says Kronenberg. The task is one of weighing up costs and benefits. Self-cleaning processes reduce operating costs and increase the machines' availability. Using process air is also a much gentler way of handling the tobacco than mechanical tobacco processing. "It is important not to compare apples with pears here," adds Product Manager Reiner Knopp. "Simply calculating the air consumption tells us nothing yet about the cost-benefit equation for an entire production facility."

Measures for achieving energy savings with other machines are already available. Hauni Service is working together with its customers to develop tailor-made production support services and effective supervision. It optimizes the set-up of production equipment thereby reducing both energy consumption and waste and can significantly increase efficiency. ■

### Scenario 1: 14 x PROTOS 90

#	NAME	DESCRIPTION
14	PROTOS 90	Cigarette production
14		Packer line F5
28	BOB-ME	Paper feed
14	VARIOS	Reservoir
4	KDF-M	Filter production
4	BOB-ME	Paper feed
4	Tray handling	Overall logistics
4	SC32 for KDF-M	Individual cooling unit

**PROTOS 90**  
Energy quantity for air conditioning hall air + refrigeration hall air:  
→ 4,665,320 kWh/yr  
→ 513,185 €/yr  
→ 41.1 billion cig/yr

### Scenario 2: 12 x PROTOS-M5 with central cooling unit

#	NAME	DESCRIPTION
12	PROTOS-M5	Cigarette production
12		Packer line F5
24	BOB-ME	Paper feed
12	VARIOS	Reservoir
1		Central cooling unit
4	KDF-M	Filter production
4	BOB-ME	Paper feed
4	Tray handling	Overall logistics

**PROTOS-M5**  
Energy quantity for air conditioning hall air + refrigeration hall air + refrigeration hall central cooling unit:  
→ 3,224,775 kWh/yr  
→ 354,725 €/yr  
→ 42.2 billion cig/yr

## ENERGY SAVINGS BY AIR CONDITIONING:

→ 1,440,545 kWh/yr  
→ 821,111 kg CO<sub>2</sub>  
→ 158,460 €/yr  
→ 30.9%



### Assumed conditions.

Annual operating hours:	5,750 hours/year	Shifts:	3 shifts/day
Hall size:	172m x 42m x 8m	Working days:	5 days/week
Energy costs:	0.11 €/kWh	Working weeks:	50 weeks/year
kWh – CO <sub>2</sub> – conversion factor	0.57 (cf. German Federal Agency Strommix Deutschland 2009)	Temperature – location Germany:	
Production quantity PROTOS 90:	10,000 cpm	Outside temperature (summer):	34°C/35% r.H.
Production quantity PROTOS-M5:	12,000 cpm	Outside temperature (winter):	-12°C/90% r.H.
Efficiency:	85%	Inside temperature (summer):	24°C/58% r.H.
Cleaning:	1 hour/day	Inside temperature (winter):	22°C/58% r.H.