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Green Solutions Business Project

WILO PUMPS KOREA 2014. 7.21.



지구를 살리는
Green Technology 윌로펌프!

C o n t e n t s

Wilco Green Solution Project

Work Process

Advanced Diagnosis Tools

References



Wilo Green Solution Project



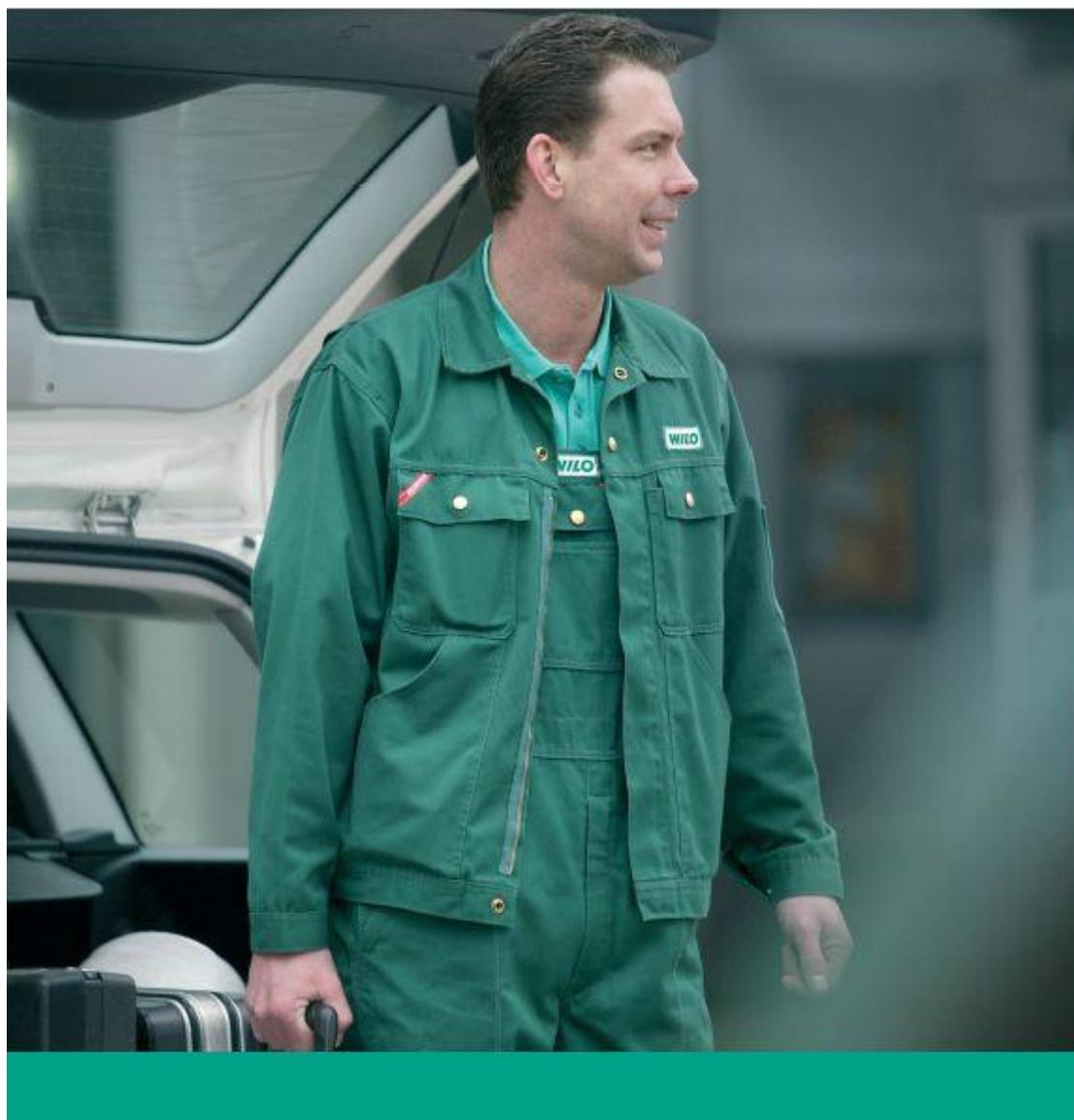
For the enhancement of pump efficiency, our Energy Diagnosis Team are dispatched to your site in order to check and examine the total energy usage including power consumption, flow rate and head using our advanced diagnosis tools. Based on the collected figures, we provide you the optimized solution for substantive energy saving and remarkable cost saving.





Work Process

Our Energy Diagnosis Team will provide satisfactory solution for each and every customer's energy saving.



Work Process

- 01 **Receive diagnosis request**
(Energy Diagnosis Team)
- 02 **Check and collect pump figures**
(Team dispatched to site)
- 03 **Consult diagnosis plan**
and schedule
- 04 **Conduct energy diagnosis**
(Flow rate, head, power, condition etc.)
- 05 **Submit diagnosis report**
(Condition, defects, solution, evaluation)
- 06 **Consult energy saving solution**
(validity verification, pump substitution)
- 07 **Deliver and substitute to compatible**
pump for energy saving
- 08 **Verify energy consumption reduction**
(Trial run, condition check, confirmation)



Advanced Diagnosis Tools

Our Energy Diagnosis Team will provide satisfactory solution for each and every customer's energy saving.

Ultrasonic Flow Meter

Flow rate



Portable Power Meter

Voltage, current, power



Digital Pressure Gauge

Suction/Discharge valve pressure (precise measurement)



Vibration Meter

Vibration



Stroboscope

RPM



Temperature Meter

Temperature examination



Noise Level Meter

Pump Noise/ Motor Noise



Voltage detector

Residual voltage



Low resistor Meter

Low resistor



Super Megohm meter

Insulation resistance



Multi Tester

Voltage, Current, Hz



Insulation Tester

Insulation



Coating Thickness Gauge

Thickness



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Green Solutions Business References

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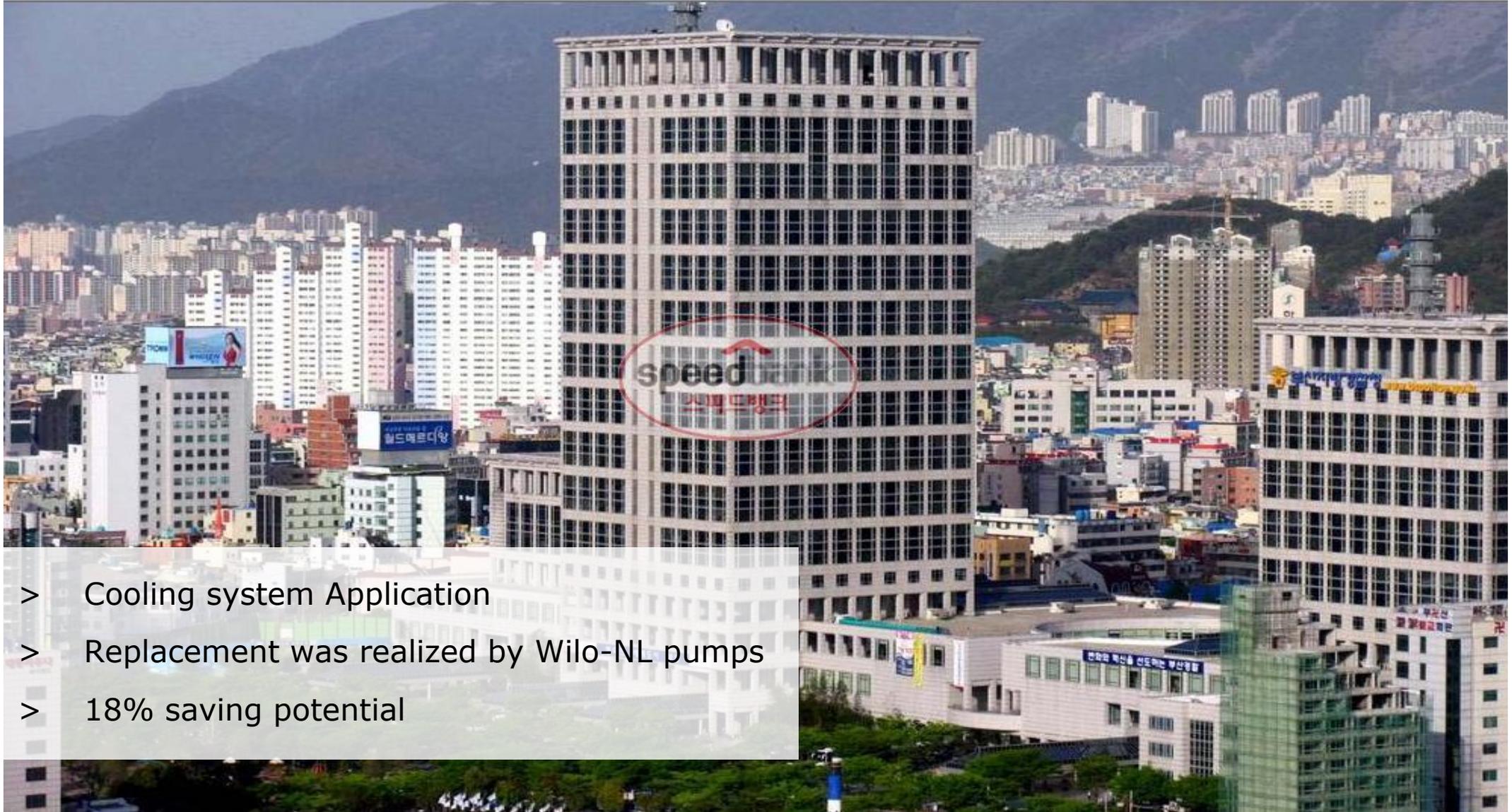
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Building Services

Commercial Projects

Busan City Hall , Busan, Korea



- > Cooling system Application
- > Replacement was realized by Wilo-NL pumps
- > 18% saving potential

Busan City Hall ,Busan, Korea

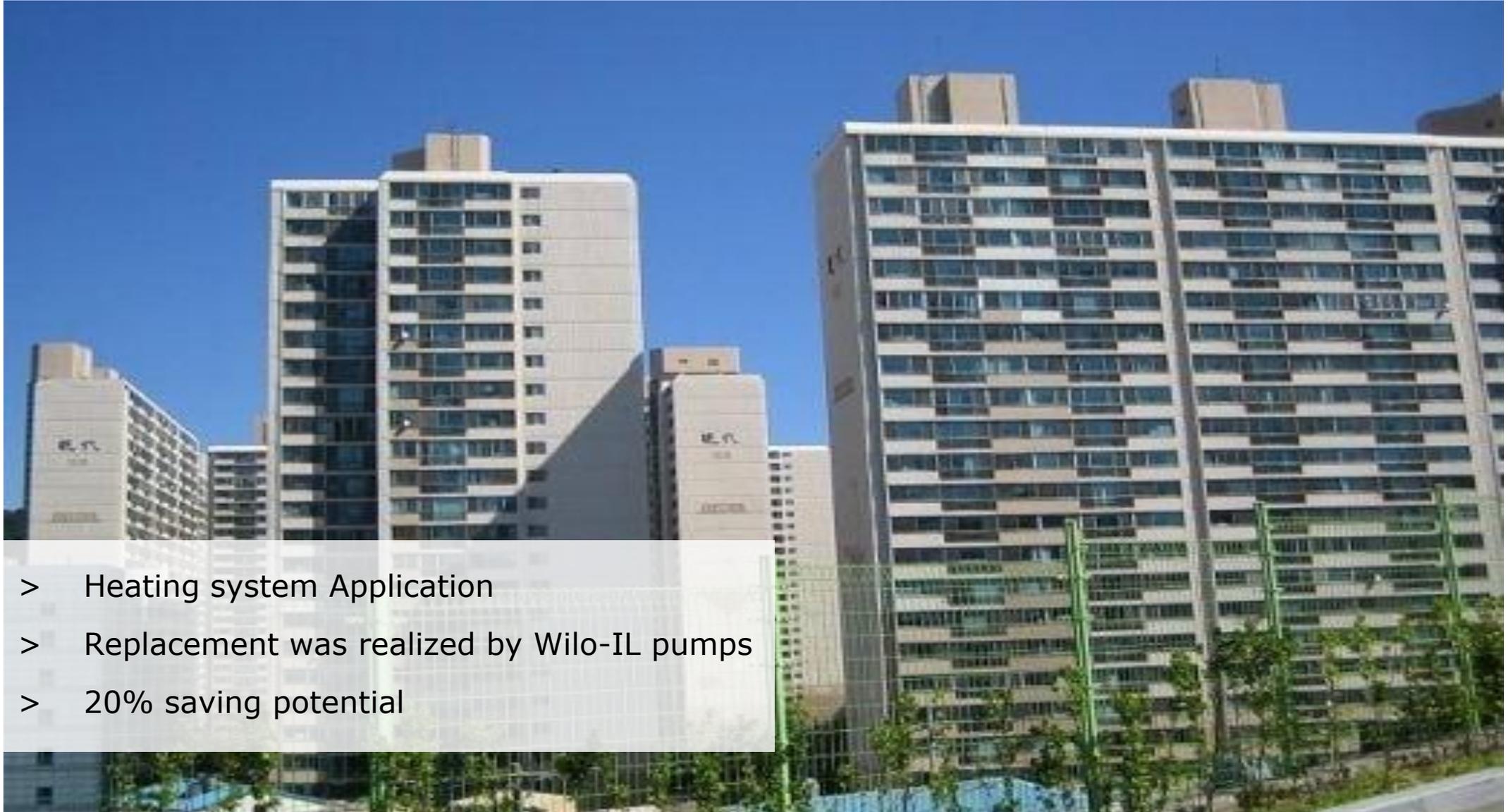


Saving potential
€ 16,991.-
per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—NL pumps	
Pump power consumption measured	310 kW	274 kW	36 kW
Total electricity consumption expected	1,339,200 kWh	1,092,960 kWh	246,240 kWh
Energy costs (0,069€/kWh)	92,405.- €/year	75,414.- €/year	16,991.- €/year
Investment costs		€ 30,345.-	Amortization 1.8 years

Dadae Hyundai APT , Busan, Korea



- > Heating system Application
- > Replacement was realized by Wilo-IL pumps
- > 20% saving potential

Dadae Hyundai APT , Busan, Korea



Saving potential
 € 3,929.-
 per year



	Old	New	Savings
Pump technology	Inline pumps	Wilo—Inline pumps	
Pump power consumption measured	48 kW	37 kW	11 kW
Total electricity consumption expected	284,700 kWh	227,760 kWh	56,940 kWh
Energy costs (0,069€/kWh)	19,644.- €/year	15,715.- €/year	3,929.- €/year
Investment costs		€ 4,138.-	Amortization 1.1 years

Busan LOTTE HOTEL , Busan, Korea



- > Water supply system Application
- > Replacement was realized by Wilo-Booster system
- > 36% saving potential

Busan LOTTE HOTEL , Busan, Korea



Saving potential
€ 1,209.-
per year



	Old	New	Savings
Pump technology	Multi-stage pumps	Wilo—Booster System	
Pump power consumption measured	7.5 kW * 3ea	5.5 kW * 3pumps	6 kW
Total electricity consumption expected	48,618 kWh	31,098 kWh	17,520 kWh
Energy costs (0,069€/kWh)	3,355.- €/year	2,146.- €/year	1,209.- €/year
Investment costs		€ 9,655.-	Amortization 7.9 years

Busan St'Mary's Medical Center , Busan, Korea



- > Replacement was realized by Wilo-IL pumps
- > 21% saving potential
- > Boiler Circulating Pump & Heating System Application

Busan St'Mary's Medical Center , Busan, Korea



	Old	New	Savings
Pump technology	Inline pumps	Wilo- Inline pumps	
Pump power consumption measured	75 kW	65 kW	10 kW
Total electricity consumption expected	280,000 kWh	220,000kWh	60,000 kWh
Energy costs (0,069€/kWh)	19,320.- €/year	15,180.- €/year	4,140.- €/year
Investment costs		€ 20,690.-	Amortization 5.0 years

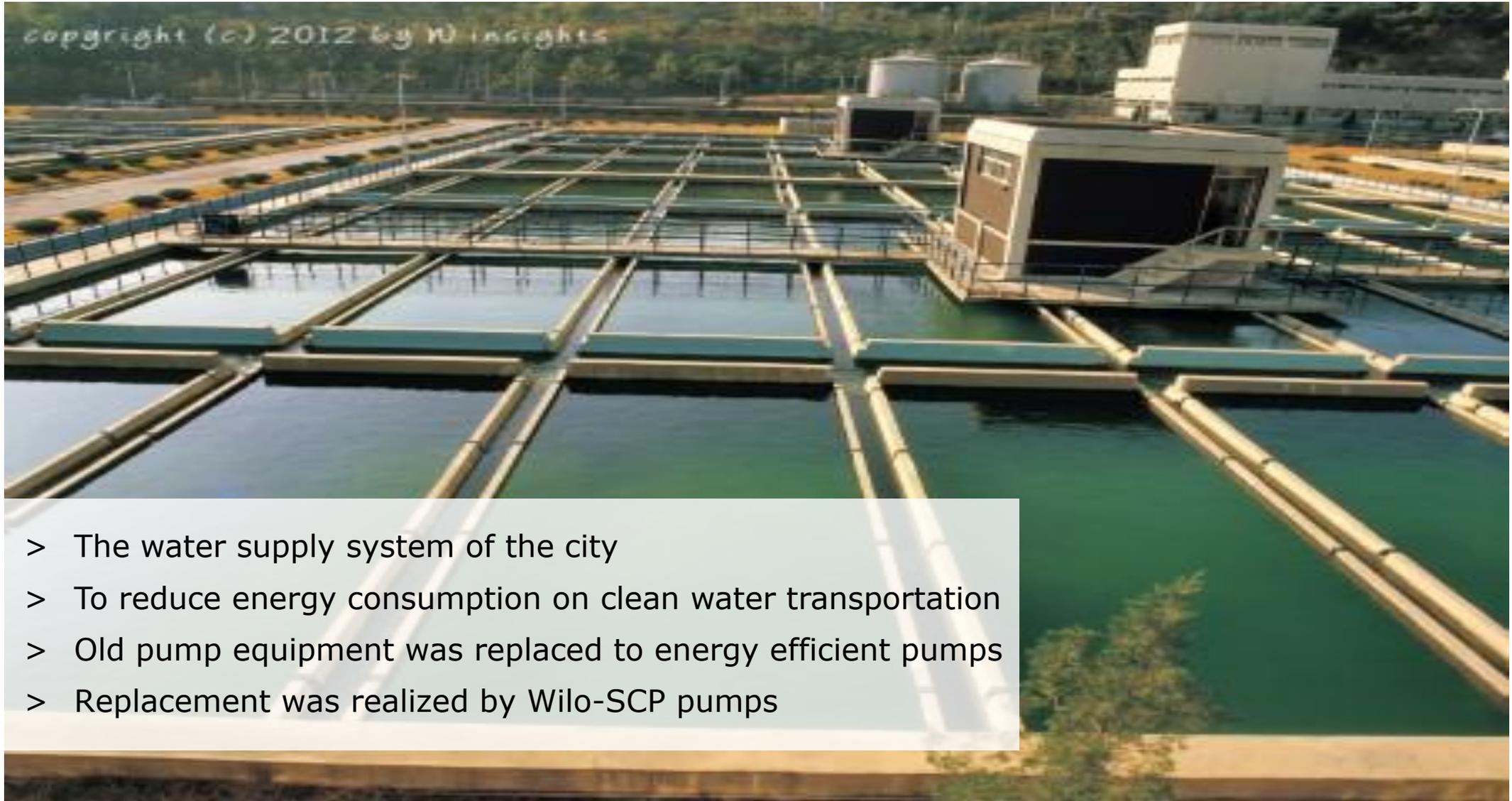
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Water Management

Commercial Project

Suwon Metropolitan Waterworks , Suwon, Korea



- > The water supply system of the city
- > To reduce energy consumption on clean water transportation
- > Old pump equipment was replaced to energy efficient pumps
- > Replacement was realized by Wilo-SCP pumps

Suwon Metropolitan Waterworks , Suwon, Korea



Saving potential
€ 15,716.-
per year



	Old	New	Savings
Pump technology	Split Case pumps	Wilo—SCP pumps	
Pump power consumption measured	264 kW	230 kW	34 kW
Total electricity consumption expected	2,102,400 kWh	1,874,640 kWh	227,760 kWh
Energy costs (0,069€/kWh)	145,066.- €/year	129,350.- €/year	15,716.- €/year
Investment costs		€ 44,827.-	Amortization 2.8 years

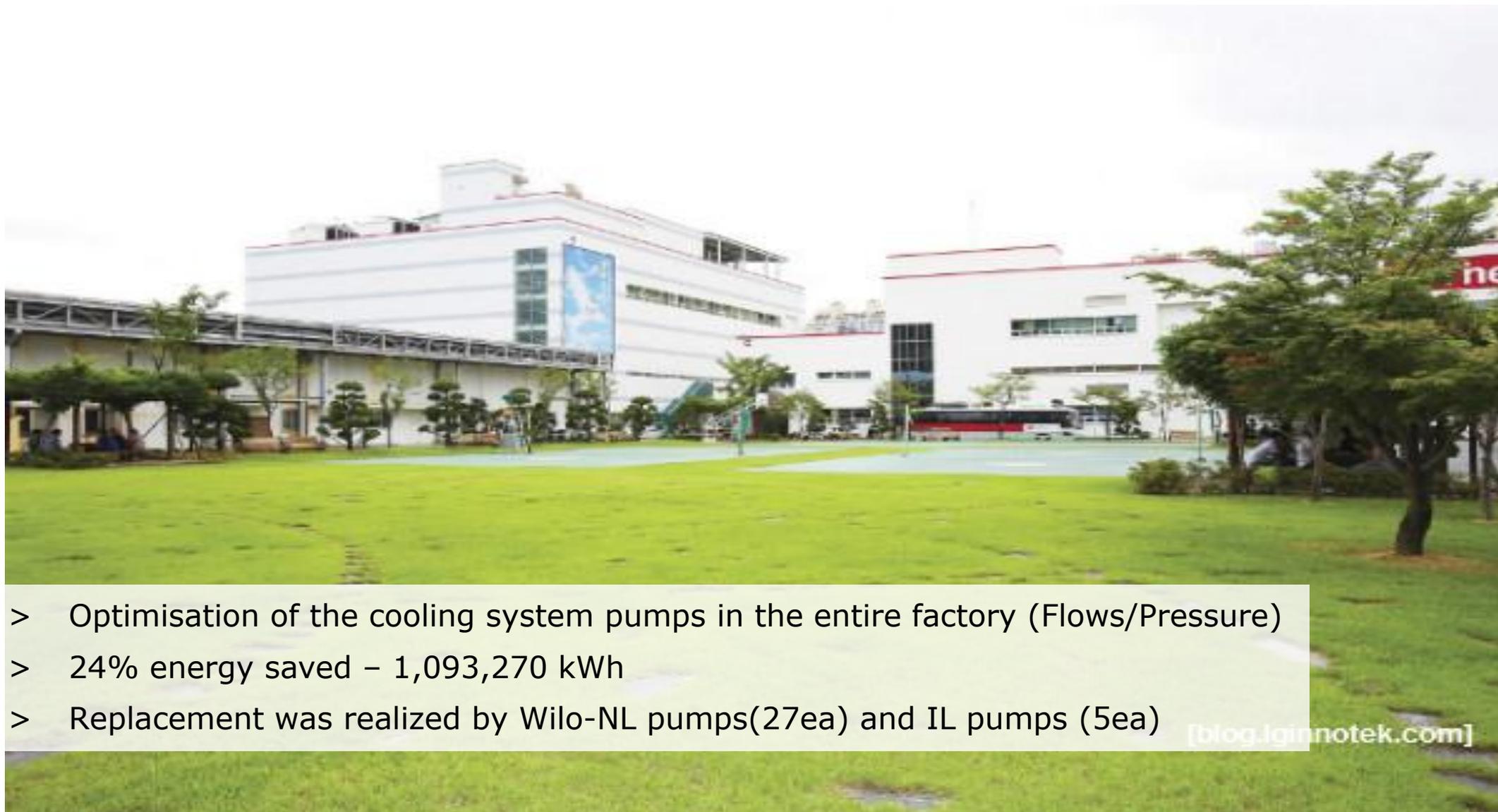
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Industry

Commercial Projects

LG innotec , Chungju , Korea



- > Optimisation of the cooling system pumps in the entire factory (Flows/Pressure)
- > 24% energy saved – 1,093,270 kWh
- > Replacement was realized by Wilo-NL pumps(27ea) and IL pumps (5ea)

[blog.lginnotek.com]

LG innotec , Chungju , Korea



Saving potential
€ 75,436.-
per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—NL pumps	
Pump power consumption measured	858 kW	744 kW	114 kW
Total electricity consumption expected	4,510,865 kWh	3,417,595 kWh	1,093,270 kWh
Energy costs (0,069€/kWh)	311,250.- €/year	235,814.- €/year	75,436.- €/year
Investment costs		€ 98,620.-	Amortization 1.3 years

LG Electronic , Chungju 2Factory, Korea



- > Optimisation of the cooling system pumps in the factory (Flows/Pressure)
- > 47% energy saved – 432,840 kWh
- > Replacement was realized by Wilo-NL pumps

LG Electronic , Chungju 2Factory, Korea

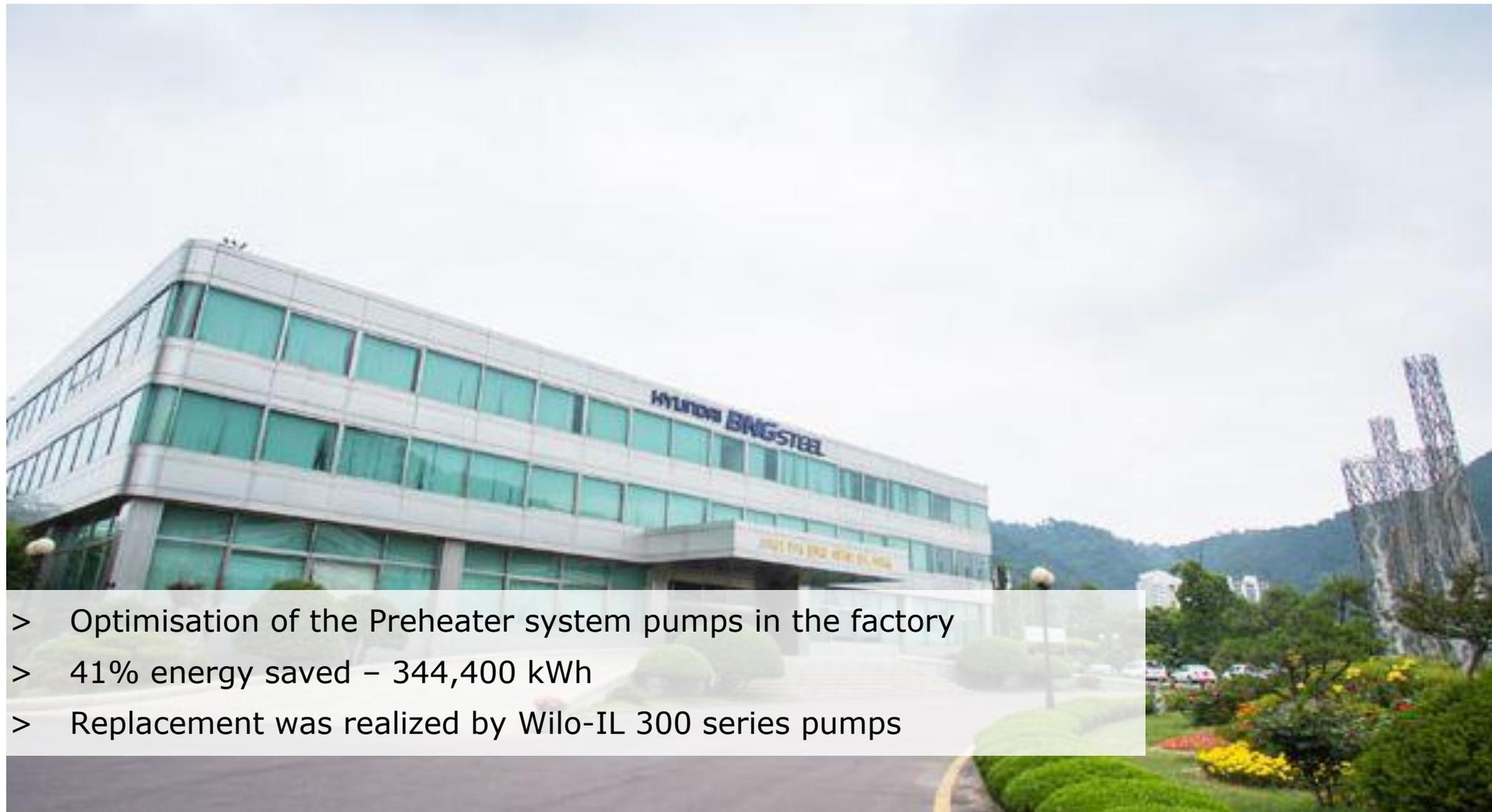


Saving potential
€ 29,866.-
 per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—NL pumps	
Pump power consumption measured	164 kW	97 kW	67 kW, optimizing Flows
Total electricity consumption expected	911,400 kWh	478,560 kWh	432,840 kWh
Energy costs (0,069€/kWh)	62,887.- €/year	33,021.- €/year	29,866.- €/year
Investment costs		€ 27,586.-	Amortization 0.9 years

Hyundai BNG STEEL , Changwon Factory, Korea



Hyundai BNG STEEL , Changwon Factory, Korea

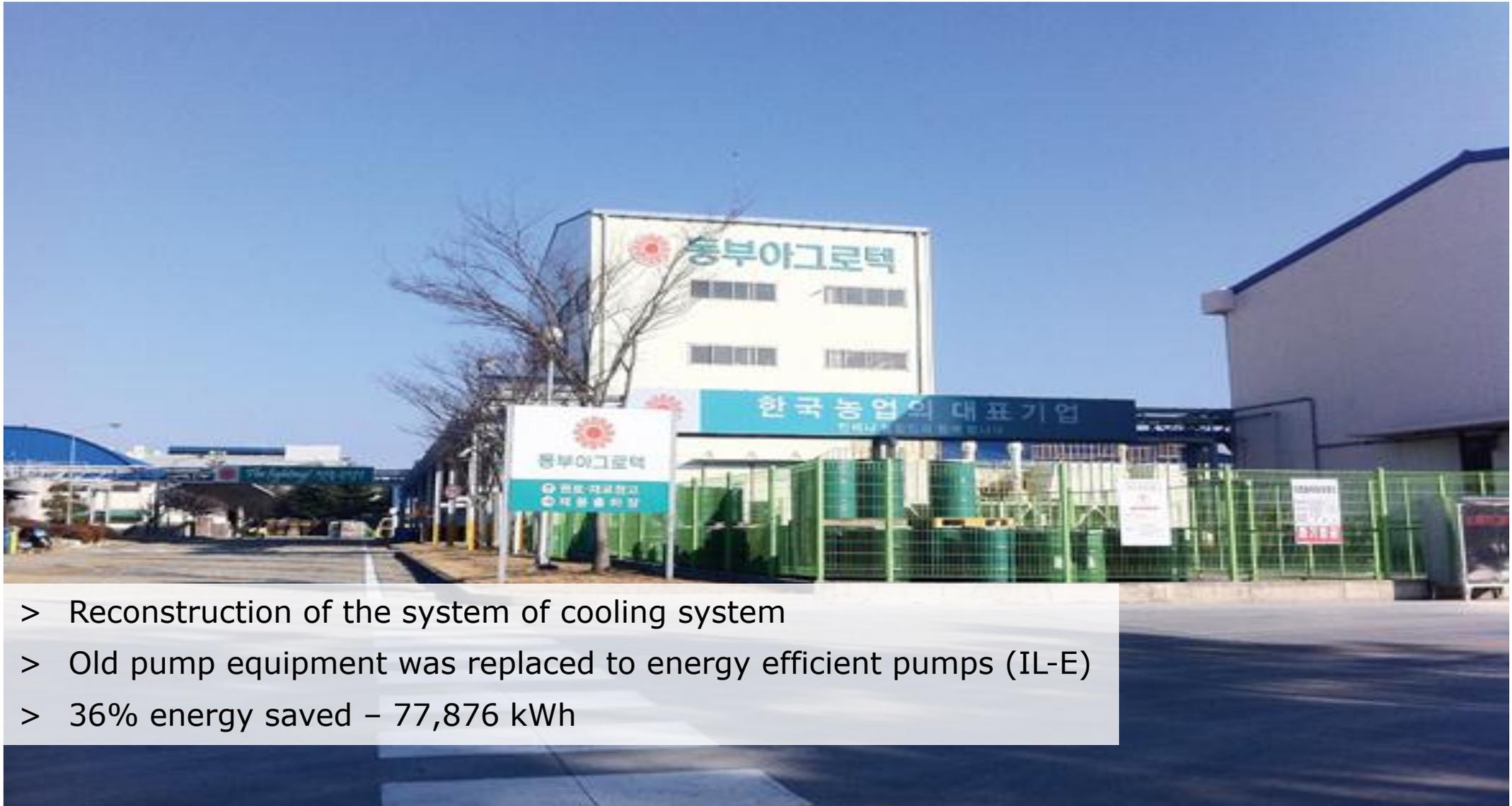


Saving potential
€ 23,764.-
per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—IL 300 series	
Pump power consumption measured	150 kW	90 kW	60 kW
Total electricity consumption expected	824,400 kWh	480,000 kWh	344,400 kWh
Energy costs (0,069€/kWh)	56,884.- €/year	33,120.- €/year	23,764.- €/year
Investment costs		€ 26,207.-	Amortization 1.1 years

Dongbu Farm Hannong, Jeonju, Korea



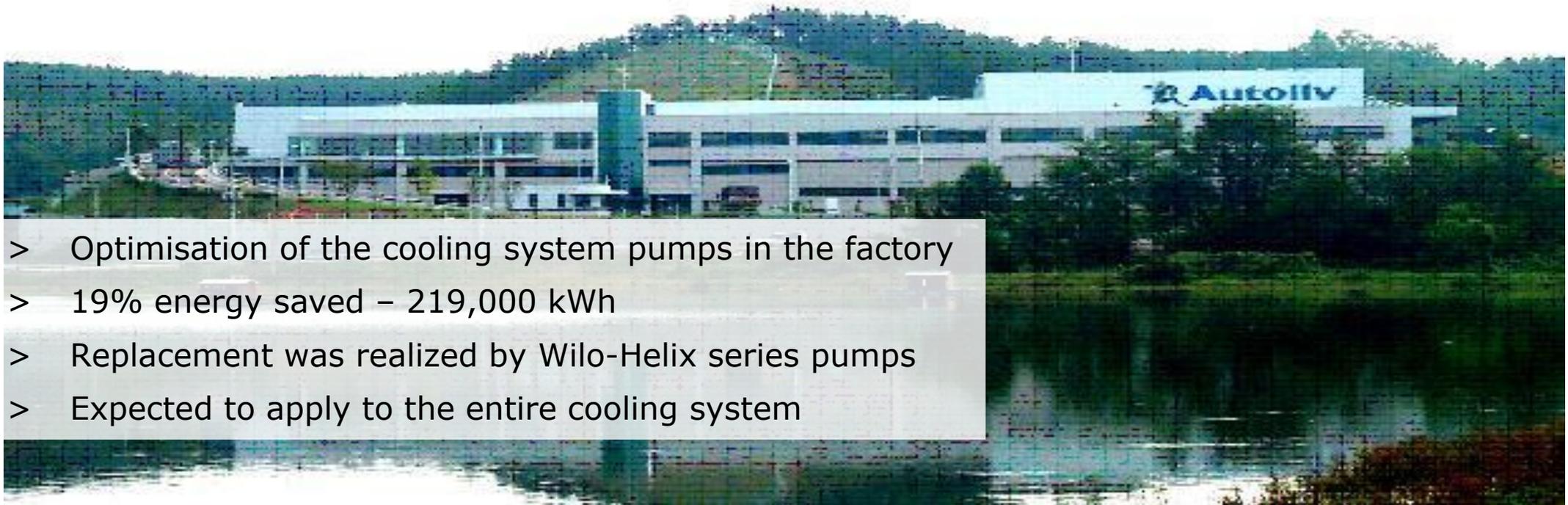
- > Reconstruction of the system of cooling system
- > Old pump equipment was replaced to energy efficient pumps (IL-E)
- > 36% energy saved – 77,876 kWh

Dongbu Farm Hannong, Jeonju, Korea



	New pumps
Pumps	9 Wilo-IL-E
Energy savings	77,876 kWh
Energy costs (0,069 €/kWh)	5,373.- €/ year
Investment	€ 17,241.-
Amortization	3.2 years

MANDO , Wonju Factory, Korea

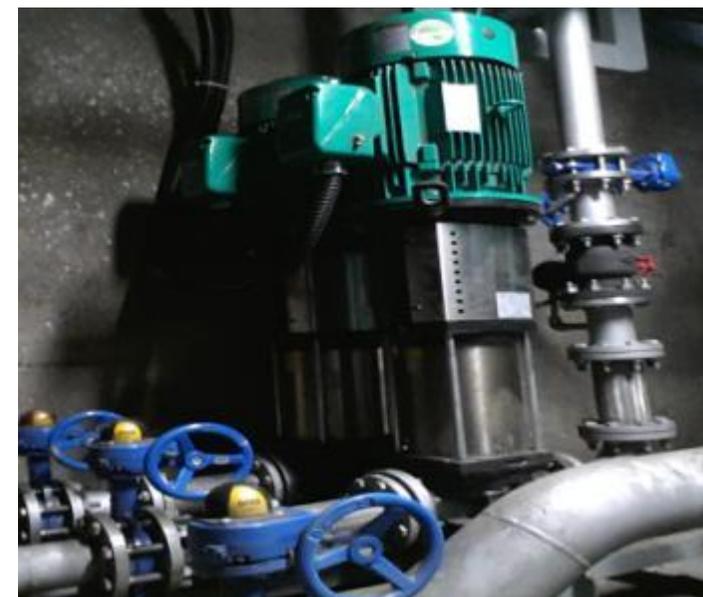


- > Optimisation of the cooling system pumps in the factory
- > 19% energy saved – 219,000 kWh
- > Replacement was realized by Wilo-Helix series pumps
- > Expected to apply to the entire cooling system

MANDO , Wonju Factory, Korea



Saving potential
€ 15,180.-
 per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—Helix	
Pump power consumption measured	168 kW	157 kW	11 kW
Total electricity consumption expected	1,147,560 kWh	927,560 kWh	219,000 kWh
Energy costs (0,069€/kWh)	79,182.- €/year	64,002.- €/year	15,180.- €/year
Investment costs		€ 17,931.-	Amortization 1.2 years

Hyundai-Motor , Ulsan Factory, Korea



- > Test Case : Optimisation of the Wastewater Treatment system (secondary treatment pumps)
- > 13% energy saved – 38,500 kWh
- > Replacement was realized by WPK-PSV series pumps
- > Expected to apply to the entire wastewater treatment system

Hyundai-Motor , Ulsan Factory, Korea



Saving potential
€ 2,657.-
 per year



	Old	New	Savings
Pump technology	End suction pumps	WPK—PSV pumps	
Pump power consumption measured	100 kW	90 kW	10 kW
Total electricity consumption expected	283,500 kWh	245,000 kWh	38,500 kWh
Energy costs (0,069€/kWh)	19,562.- €/year	16,905.- €/year	2,657.- €/year
Investment costs		€ 6,897.-	Amortization 2.6 years

Drbworld , Yangsan Factory, Korea



- > Test Case : Optimisation of the cooling system (Flows/Pressure)
- > 50% energy saved – 240,000 kWh
- > Replacement was realized by WPK-PMT series pumps
- > Expected to apply to the Drbworld Busan factory cooling system

Drbworld , Yangsan Factory, Korea

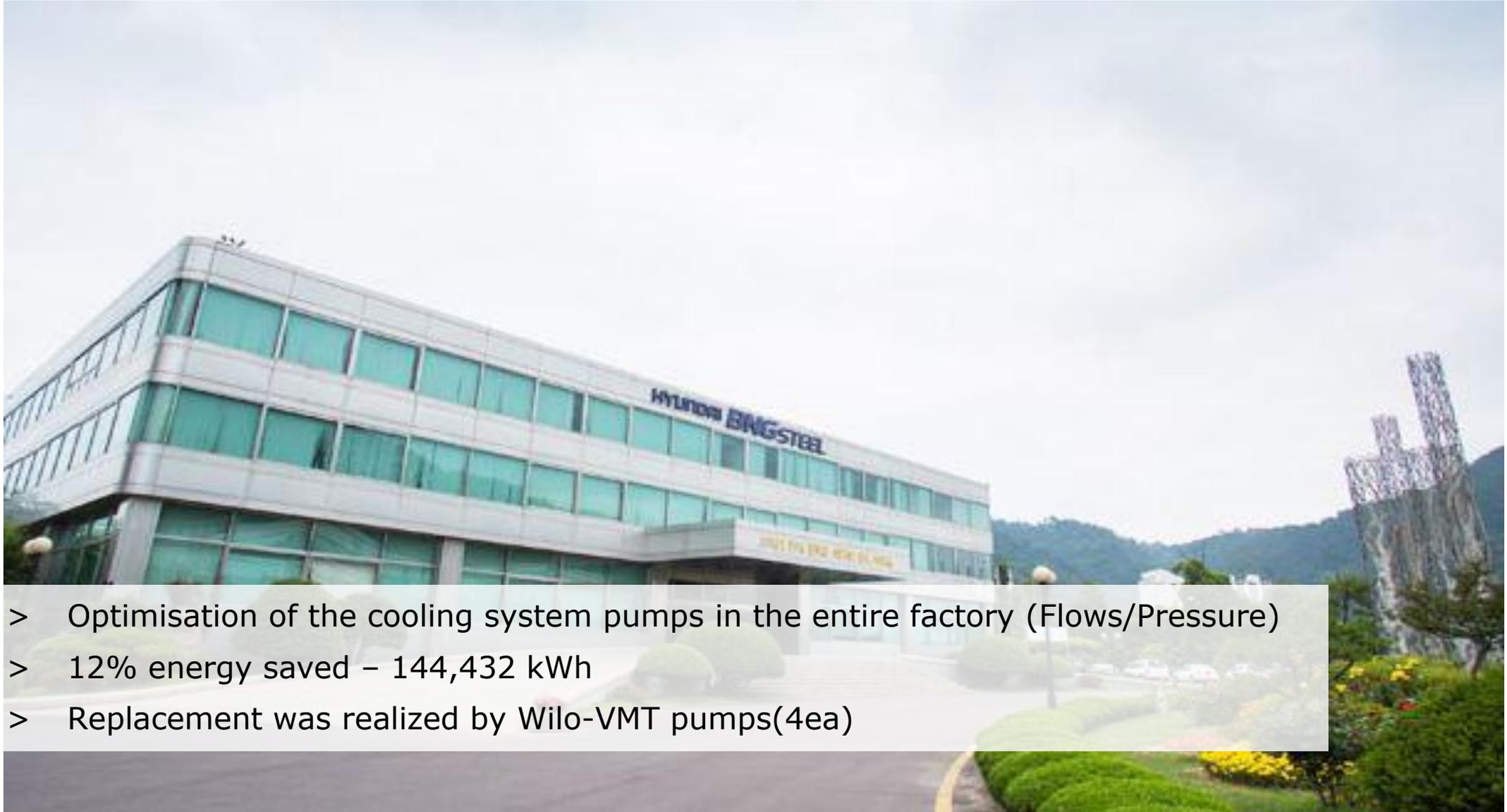


Saving potential
€ 16,560.-
per year



	Old	New	Savings
Pump technology	Multi-stage pumps	WPK—PMT pumps	
Pump power consumption measured	74 kW	60 kW	14 kW
Total electricity consumption expected	480,000 kWh	240,000 kWh	240,000 kWh
Energy costs (0,069€/kWh)	33,120.- €/year	16,560.- €/year	16,560.- €/year
Investment costs		€ 17,793.-	Amortization 1.1 years

Hyundai BNG STEEL , Changwon Factory, Korea



Hyundai BNG STEEL , Changwon Factory, Korea

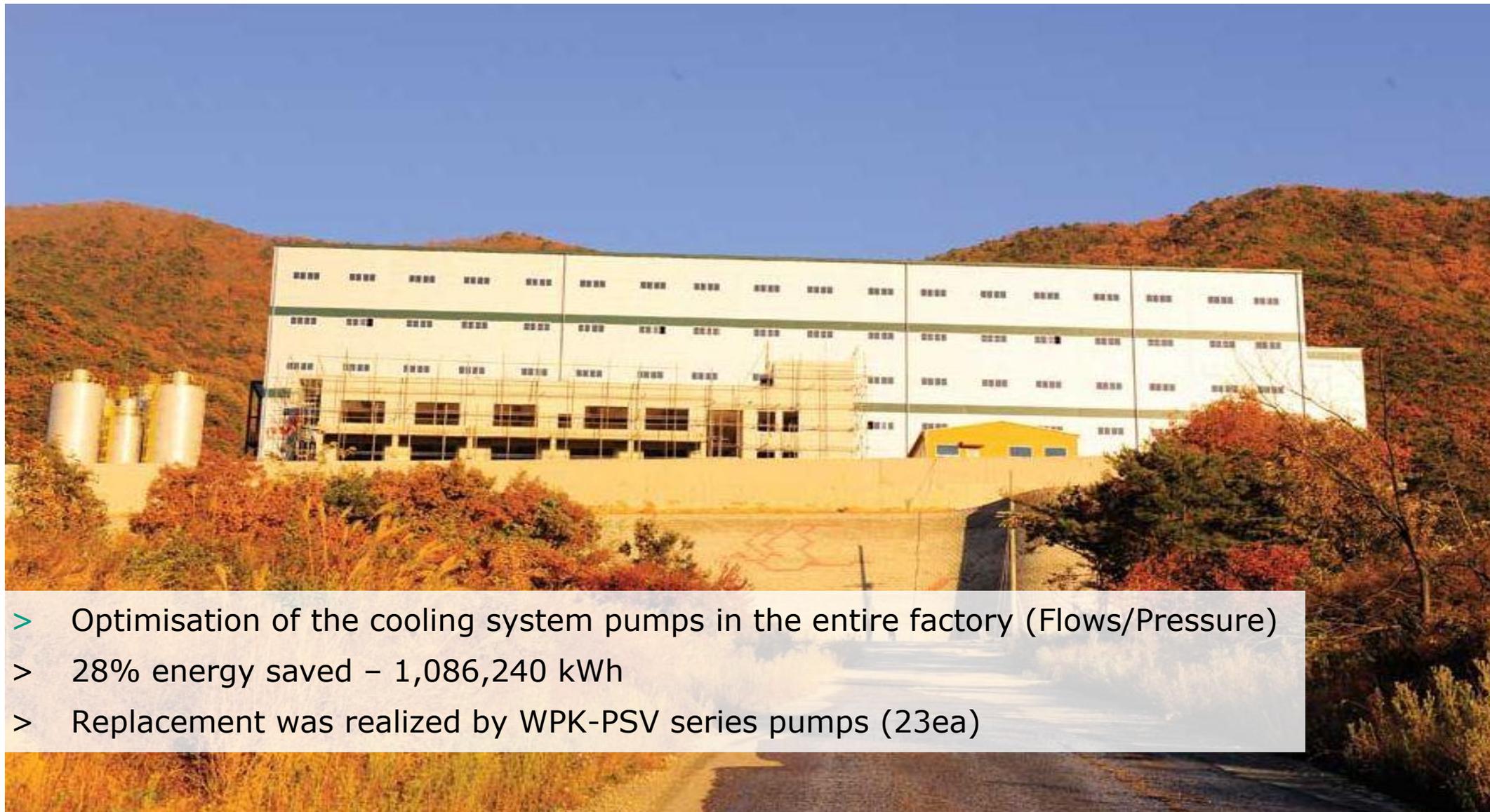


Saving potential
€ 8,995.-
per year



	Old	New	Savings
Pump technology	End suction pumps	WPK—VMT pumps	
Pump power consumption measured	143 kW	125 kW	18 kW
Total electricity consumption expected	1,167,696 kWh	1,023,264 kWh	144,432 kWh
Energy costs (0,062€/kWh)	72,397.- €/year	63,442.- €/year	8,995.- €/year
Investment costs		€ 51,034.-	Amortization 5.7 years

Dury Chemical, Kimhae Factory, Korea



- > Optimisation of the cooling system pumps in the entire factory (Flows/Pressure)
- > 28% energy saved – 1,086,240 kWh
- > Replacement was realized by WPK-PSV series pumps (23ea)

Dury Chemical, Kimhae Factory, Korea

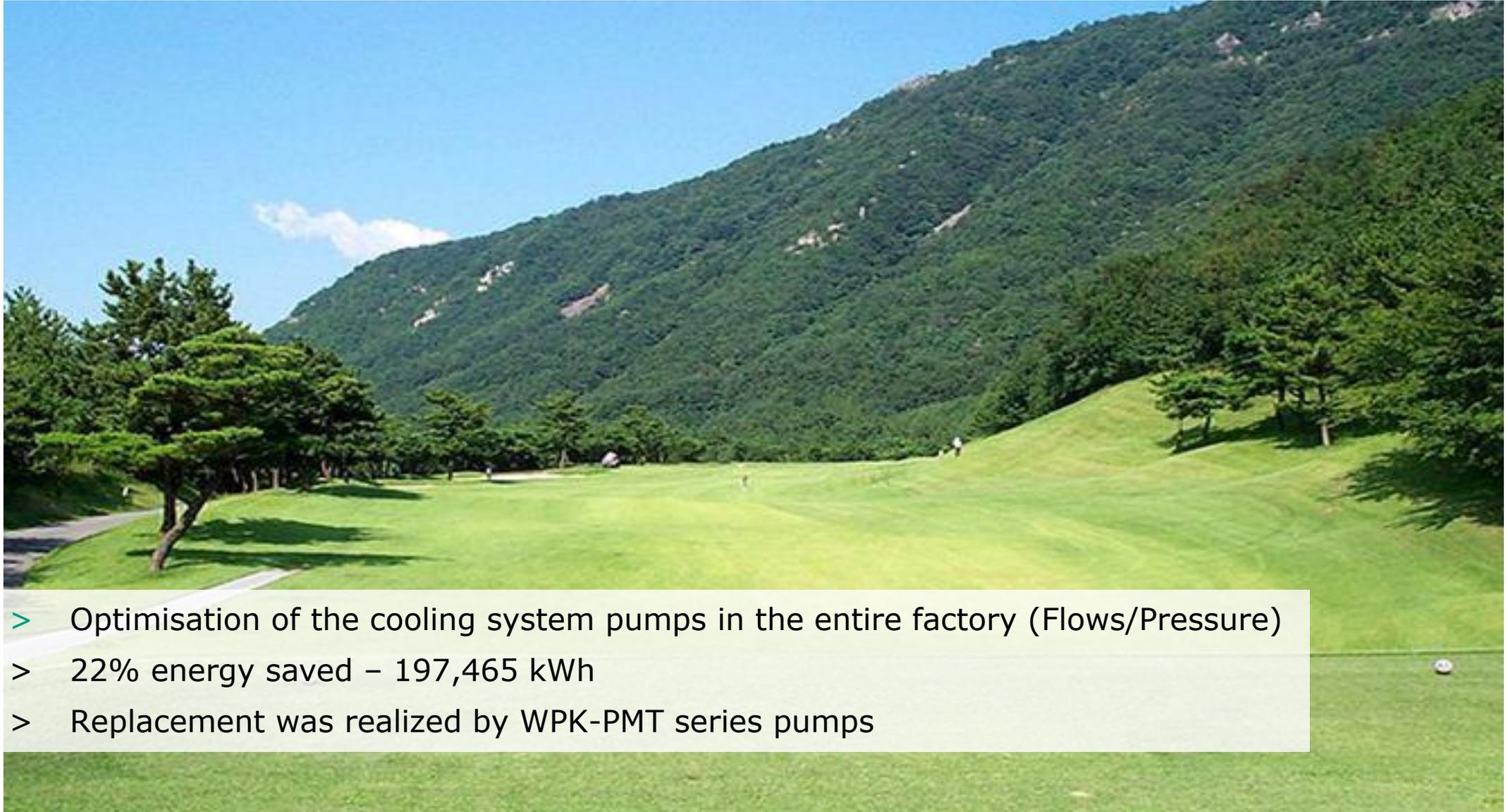


Saving potential
€ 70,666.-
per year



	Old	New	Savings
Pump technology	End suction pumps	WPK—PSV pumps	
Pump power consumption measured	437 kW	313 kW	124 kW
Total electricity consumption expected	3,828,120kWh	2,741,880kWh	1,086,240kWh
Energy costs (0,065€/kWh)	248,828.- €/year	178,222.- €/year	70,606.- €/year
Investment costs		€ 36,896.-	Amortization 0.5 years

Gaya Country Club, Kimhae , Korea



- > Optimisation of the cooling system pumps in the entire factory (Flows/Pressure)
- > 22% energy saved – 197,465 kWh
- > Replacement was realized by WPK-PMT series pumps

Gaya Country Club, Kimhae , Korea



Saving potential
€ 13,890.-
per year



	Old	New	Savings
Pump technology	Multi-stage pumps	WPK—PMT pumps	
Pump power consumption measured	248 kW	194 kW	54 kW
Total electricity consumption expected	906,295kWh	708,830kWh	197,465kWh
Energy costs (0,070€/kWh)	63,753.- €/year	49,863.- €/year	13,890.- €/year
Investment costs		€ 6,758.-	Amortization 0.5 years

Hyundai-Motor , Ulsan Factory, Korea



- > Optimisation of the Wastewater Treatment system
- > 20% energy saved – 400,810 kWh
- > Replacement was realized by WPK-PSV series pumps

Hyundai-Motor , Ulsan Factory, Korea



Saving potential
€ 25,251.-
per year



	Old	New	Savings
Pump technology	End suction pumps	WPK—PSV pumps	
Pump power consumption measured	553 kW	447 kW	106 kW
Total electricity consumption expected	2,041,745kWh	1,640,935kWh	400,810kWh
Energy costs (0,063€/kWh)	128,630.- €/year	103,379.- €/year	25,251.- €/year
Investment costs		€ 30,092.-	Amortization 1.2 years

Hyundai-Motor , Jeonju Factory, Korea



- > Optimisation of the cooling system pumps in the entire factory (Flows/Pressure)
- > 34% energy saved – 136,098 kWh
- > Replacement was realized by WPK-NL series pumps

Hyundai-Motor , Jeonju Factory, Korea

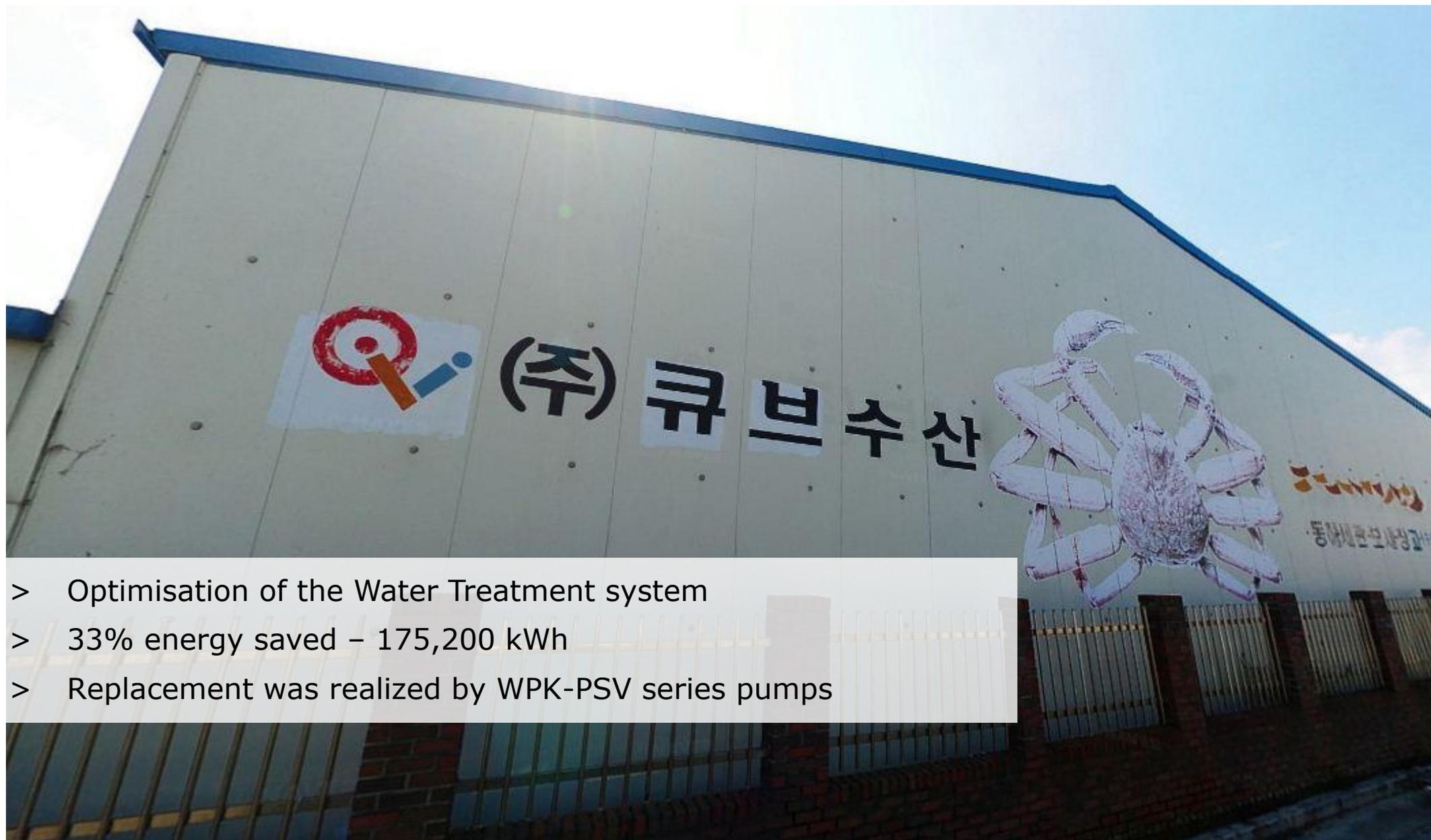


Saving potential
€ 8,448.-
per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—NL pumps	
Pump power consumption measured	165 kW	107 kW	58 kW
Total electricity consumption expected	400,536kWh	264,438kWh	136,098kWh
Energy costs (0,062€/kWh)	24,861.- €/year	16,413.- €/year	8,448.- €/year
Investment costs		€ 18,841.-	Amortization 2.2 years

CUVE FISHERY , Donghae , Korea



CUVE FISHERY , Donghae , Korea



Saving potential
€ 12,088.-
 per year



	Old	New	Savings
Pump technology	End suction pumps	WPK—PSV pumps	
Pump power consumption measured	90 kW	60 kW	30 kW
Total electricity consumption expected	525,600kWh	350,400 kWh	175,200 kWh
Energy costs (0,069€/kWh)	36,266.- €/year	24,178.- €/year	12,088.- €/year
Investment costs		€ 21,034.-	Amortization 1.7 years

LG Electronic , Chungju 1Factory, Korea



- > Optimisation of the cooling system pumps in the factory (Flows/Pressure)
- > 18% energy saved – 321,984 kWh
- > Replacement was realized by Wilo-NL pumps

LG Electronic , Chungju 1Factory, Korea

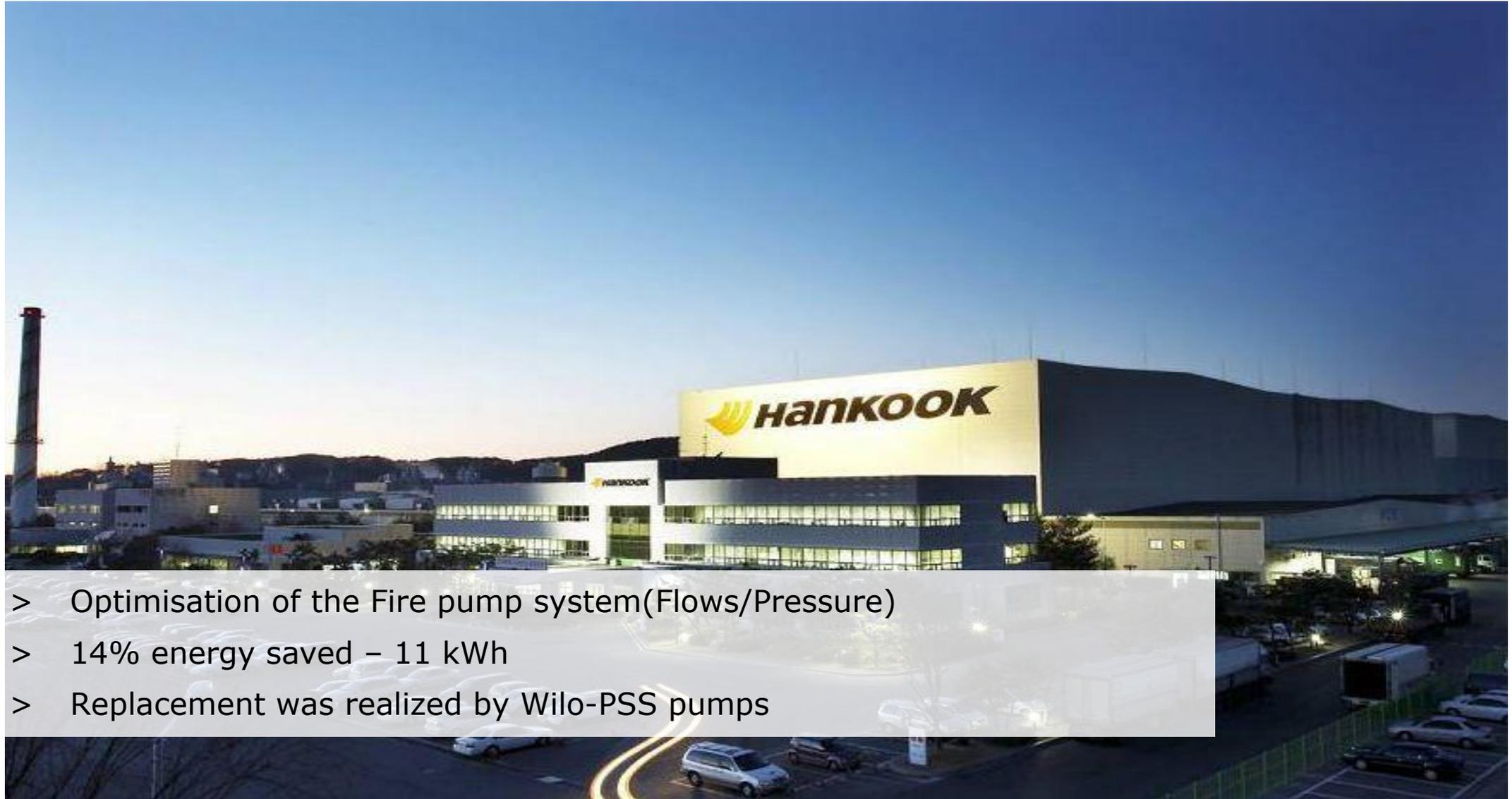


Saving potential
€ 24,426.-
 per year



	Old	New	Savings
Pump technology	End suction pumps	Wilo—NL pumps	
Pump power consumption measured	241 kW	197 kW	44 kW
Total electricity consumption expected	1,802,784 kWh	1,480,800 kWh	321,984 kWh
Energy costs (0,076€/kWh)	136,763.- €/year	112,337.- €/year	24,426.- €/year
Investment costs		€ 49,655.-	Amortization 2.0 years

Hankook Tire , Geumsan Factory, Korea



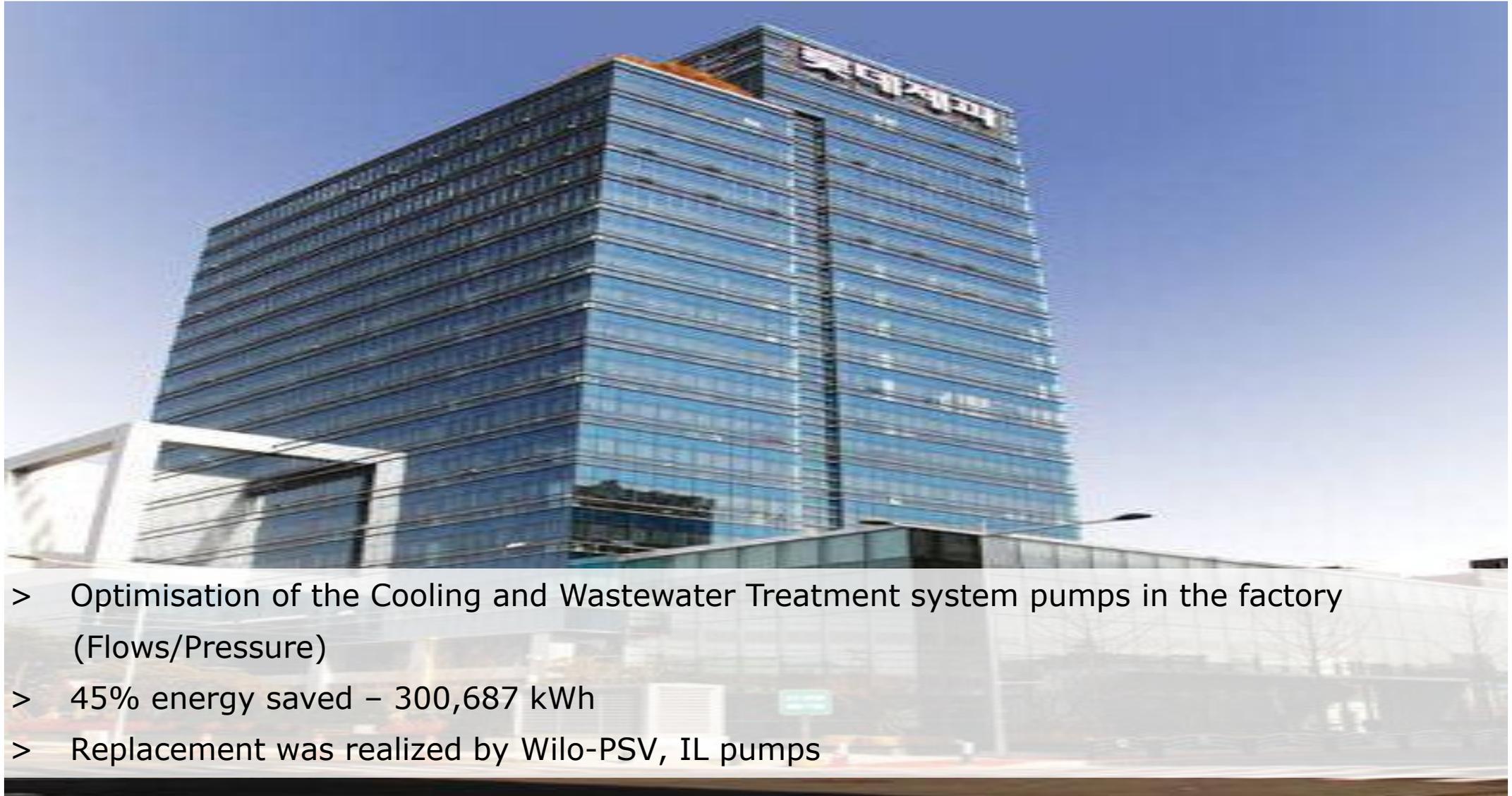
Hankook Tire , Geumsan Factory, Korea



	Old	New	Savings
Pump technology	Multi-stage Turbine Pump	Wilo— PSS(Submersible) Pump	
Pump power consumption measured	7.9 kW	6.8 kW	1.1 kW
Total electricity consumption expected	79 kWh	68 kWh	11 kWh
Energy costs (0,056€/kWh)	4.4.- €/year	3.8.- €/year	0.6.- €/year
Investment costs		€ 5,021.-	

Key fact : Pump replacement due to aging of existing pump

Lotte Confectionery , Yeongdeungpo Factory, Korea



Lotte Confectionery , Yeongdeungpo Factory, Korea



Saving potential
€ 22,811.-
per year



	Old	New	Savings
Pump technology	End suction, Inline pump	Wilo— PSV, IL Pump	
Pump power consumption measured	436.1 kW	240.9 kW	195.2 kW
Total electricity consumption expected	671,600 kWh	370,913 kWh	300,687 kWh
Energy costs (0,076€/kWh)	50,949.- €/year	28,138.- €/year	22,811.- €/year
Investment costs		€ 62,400.-	

