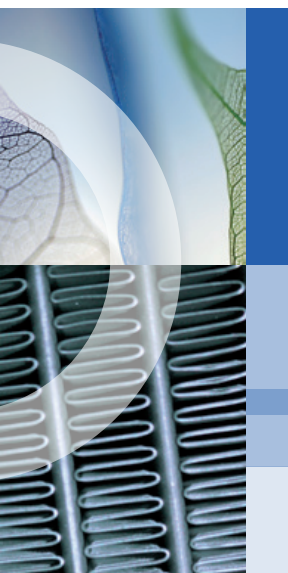




Energy Management Optimization



KULI software

Virtual Vehicle
Development

kuli.magna.com

Your Partner for Energy Management

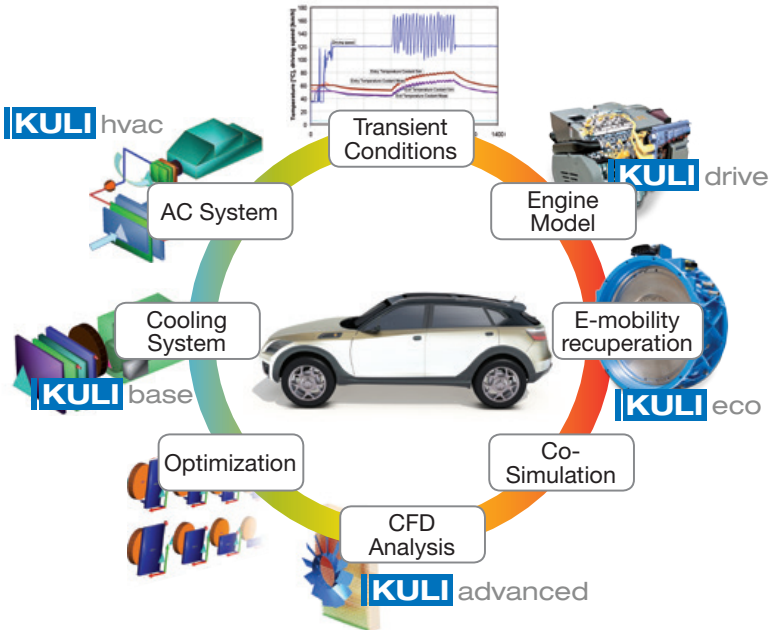
- Standard Thermal Management Tool for Premium OEMs and Suppliers
- More than 25 Years of Engineering Experience
- Support from Engineers for Engineers

Flexible and Efficient Software

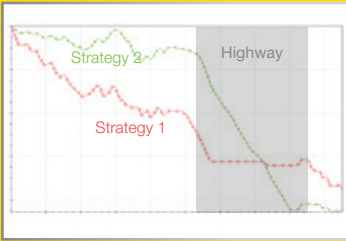
- Virtual Driving Cycles
- Fastest Tool on the Market for Steady State Investigations

Comprehensive Simulation Tool

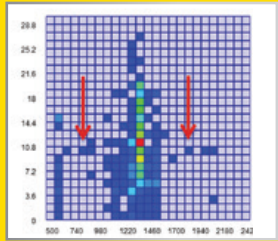
- Cooling System Layout and Optimization for all Powertrains
 - Combustion Engine
 - Hybrid Vehicles
 - Electric Vehicles (Battery, Fuel Cell)
- Energy Recuperation
 - Rankine Cycle
 - Thermal Electric Generators
 - Electric Recuperation in EVs
- HVAC Simulation
 - Air Conditioning Circuits
 - Heat Pump Applications
 - Multi-Zone Cabin Model



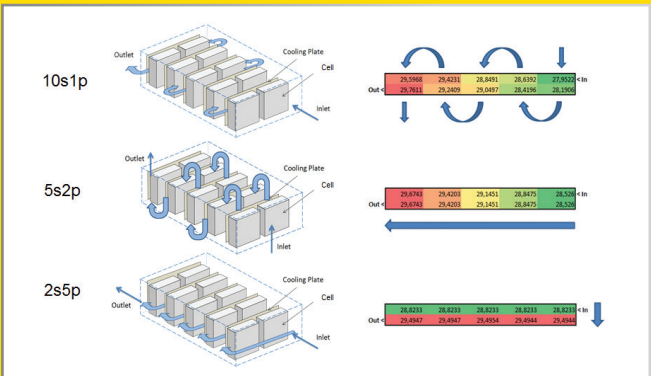
KULI Example Hybrid Vehicle Control Strategy Optimization



Hybrid Strategy Optimization

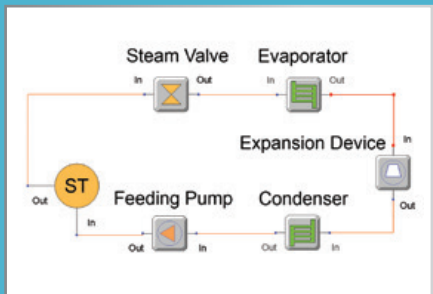


Engine Load Point Shifting



Cell Level Battery Thermal Management

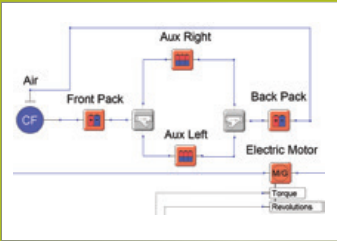
KULI Example Combustion Engine Rankine Cycle for Energy Recuperation



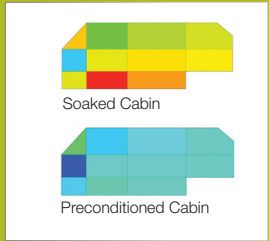
Complete Steam Circuit Model

KULI Example Electric Vehicle

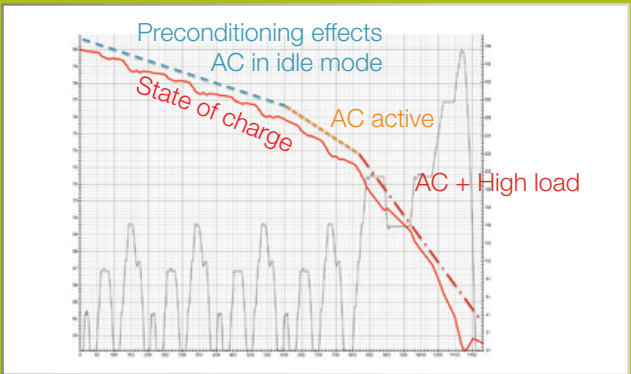
HVAC and Thermal Comfort



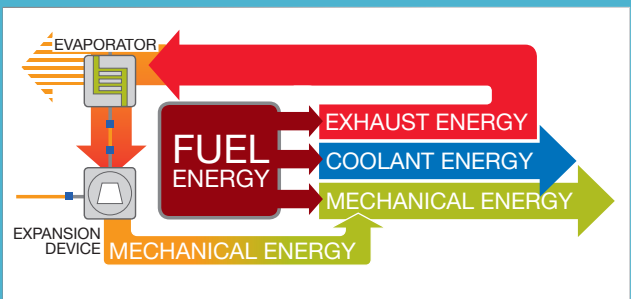
E-Component Cooling Concepts



Transient Comfort Analysis



State of Charge Tracking



Energy Flow Analysis



KULI Energy Management Software

Efficient energy usage is one of the key tasks of today's automotive industry. This topic ranges from intelligent cooling systems for internal combustion engine vehicles (warm-up) to optimized HVAC systems for electric cars (passenger comfort vs. range). KULI energy management software supports engineers to achieve their goals.

Your Benefits

- Quick Analysis and Solutions
- High Flexibility
- Save Time and Cost
- Easy to Learn and Comfortable Handling
- Clear Workflows for Engine-Cooling, E-Cooling and HVAC

Technical applications

Engine cooling systems	Refrigerant circuits	Passenger comfort
Heat up / cool down	EV / HEV development	Recuperation

KULI is the solution for passenger cars, trucks, trains, construction and farm machines and other industrial applications



KULI software

ENERGY MANAGEMENT OPTIMIZATION

Head Office:

Austria

Magna Powertrain
Engineering Center Steyr GmbH & Co KG
Steyrer Strasse 32, 4300 St. Valentin
Rolf Salomon
Phone: +43 7435 501 2382
Fax: +43 7435 501 2300
rolf.salomon@magna.com

Sales Offices:

Japan

Magna International, Tokyo
Noriyuki Muramatsu
Phone: +81 3 3548 0310
noriyukimuramatsu@magna.com

China

Magna Powertrain, Shanghai
Aisheng Tang
Phone: +86 21 6165 1662
aisheng.tang@magna.com

Sales Partners:

USA

AT engineering LLC, Lakewood
Phone: +1 734 276 5516
kuli.usa.ecs@magna.com

Korea

Tae Sung Software & Engineering Inc.
Phone: +82 2 2117 0029
jseok@tsne.co.kr

India

MAXrad SOFTWARE Pvt. Ltd
Phone: +91 80 491 441 49
rajeev@maxsoft-india.com

Brazil

VirtualCAE Servicos de
Sistemas Ltda., São Paulo
Phone: +55 11 4229-1349
vendas@virtualcae.com.br

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