



Digital control of switched mode power supplies – benefits and challenges

Teknologia 13, Helsinki

04/10/2013

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PKC Electronics Oy

Digital control of switched mode power supplies

- Basics
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- Challenges

Conclusion



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The Intelligent Power Management Solutions



Power Management Solutions

Power Technologies

Analog

DIGITAL

Intelligent Power Supplies

Precision Power Supply Family

LED Driver Family - ALVA

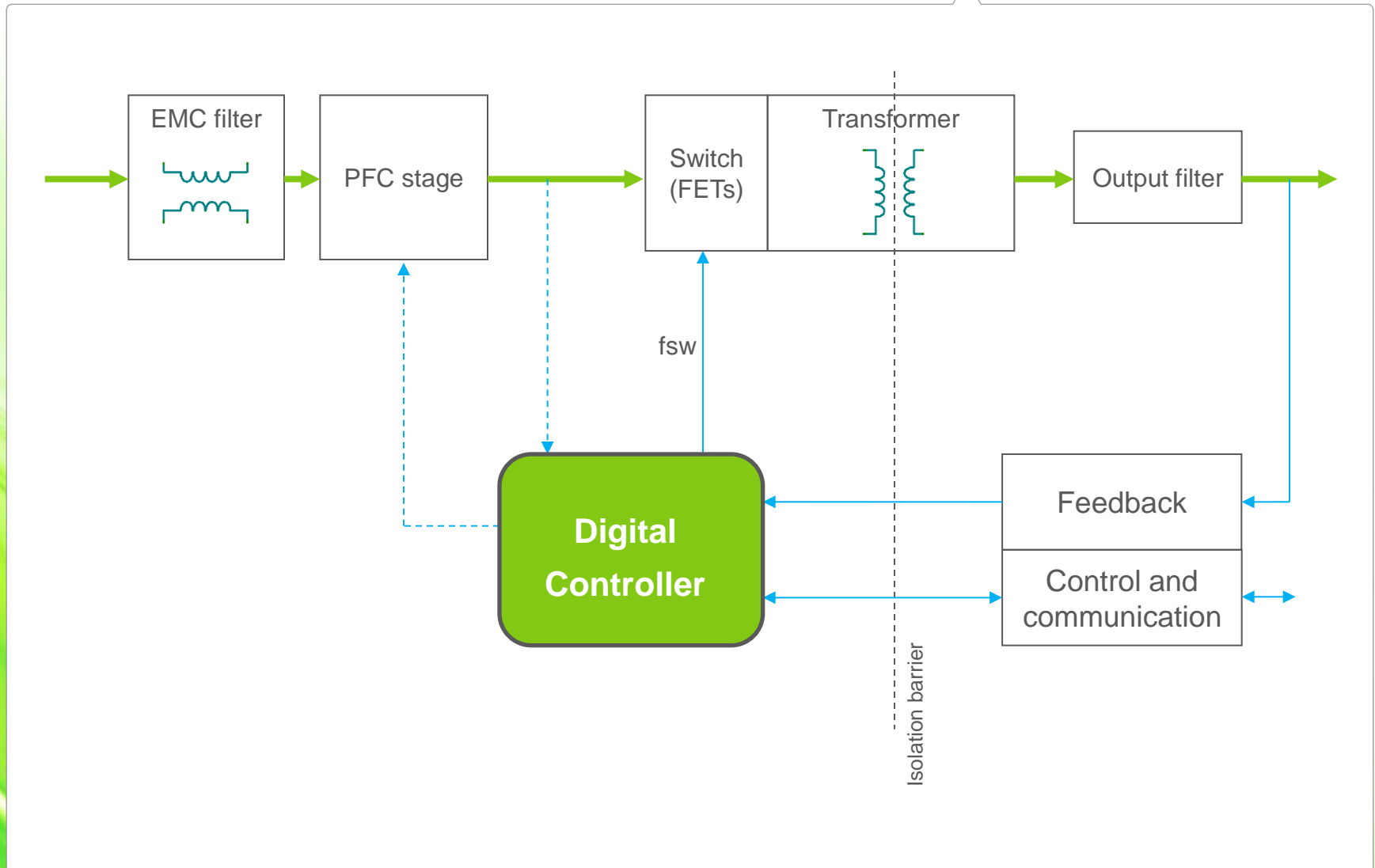
High Voltage Power Solutions

Protection

Surge, EMI, ESD



Digital power control is the future !

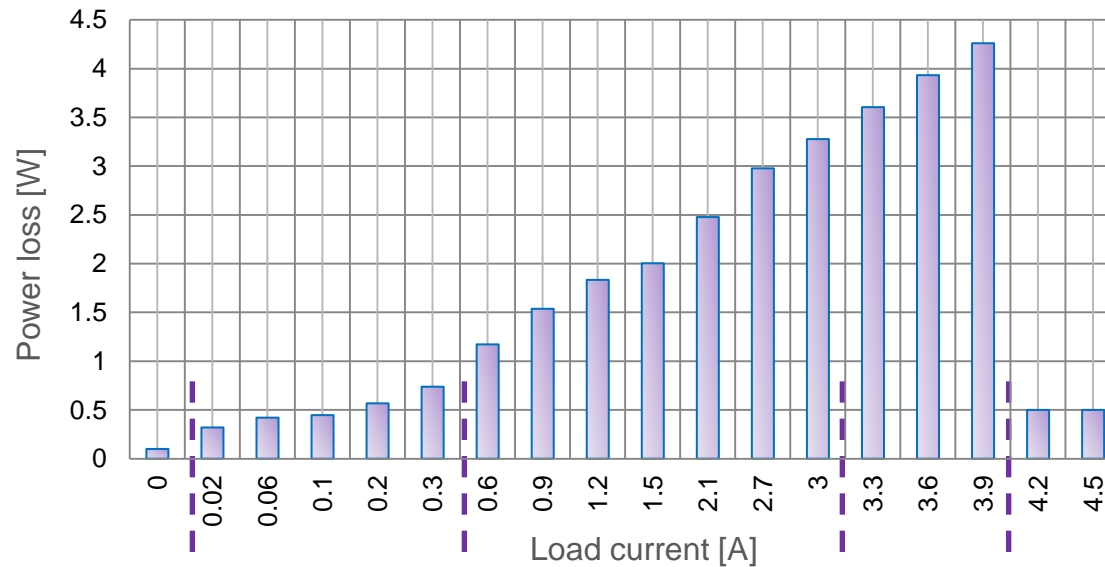


Benefits

Operation modes

Operation modes

Case example: LLC resonant DC/DC PSU, Vin 400V, Vout 24V



Start-up

Stand-by

Burst

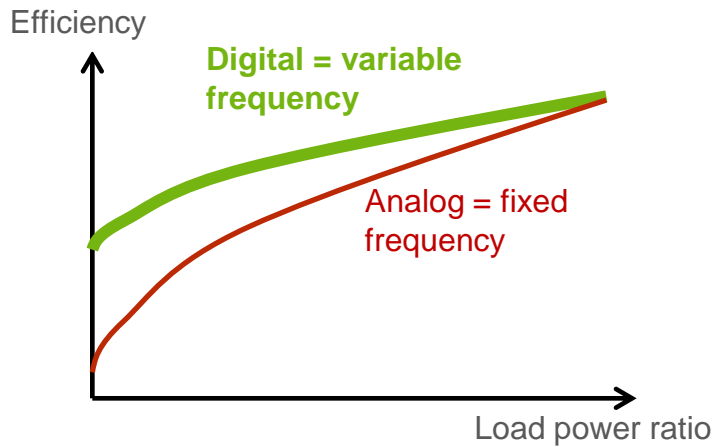
Normal

Boost

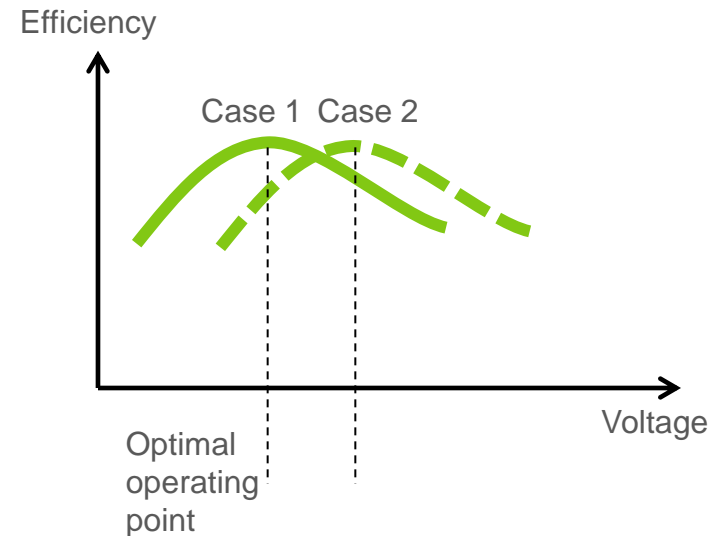
OCP

Benefits

Efficiency optimization



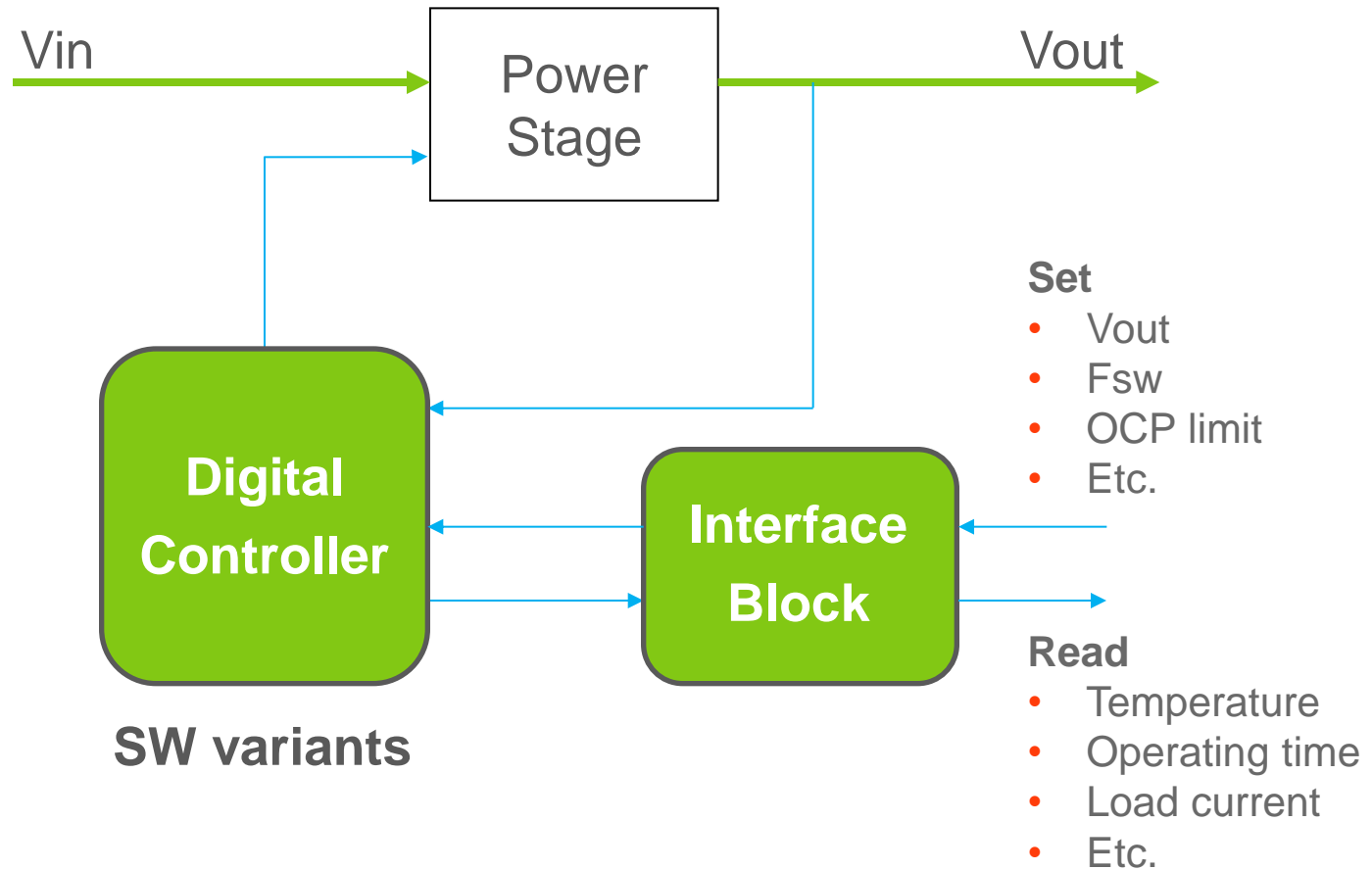
Optimized switching frequency



Optimized voltage levels

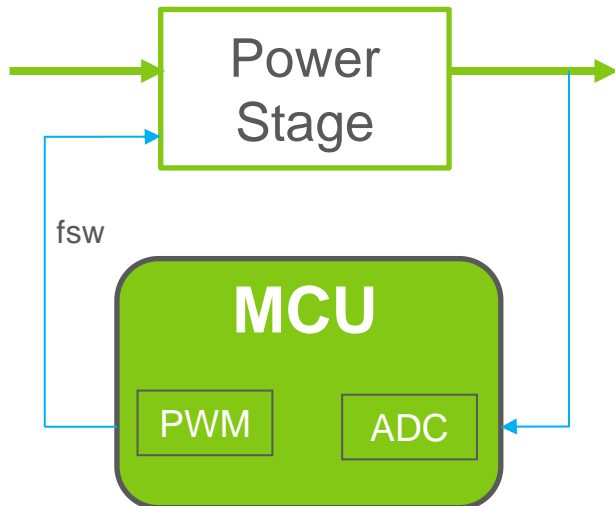
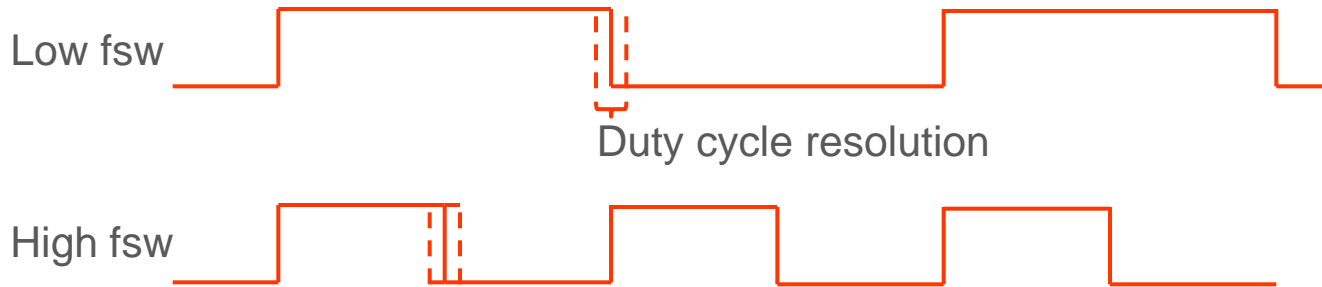
Benefits

Functional integration

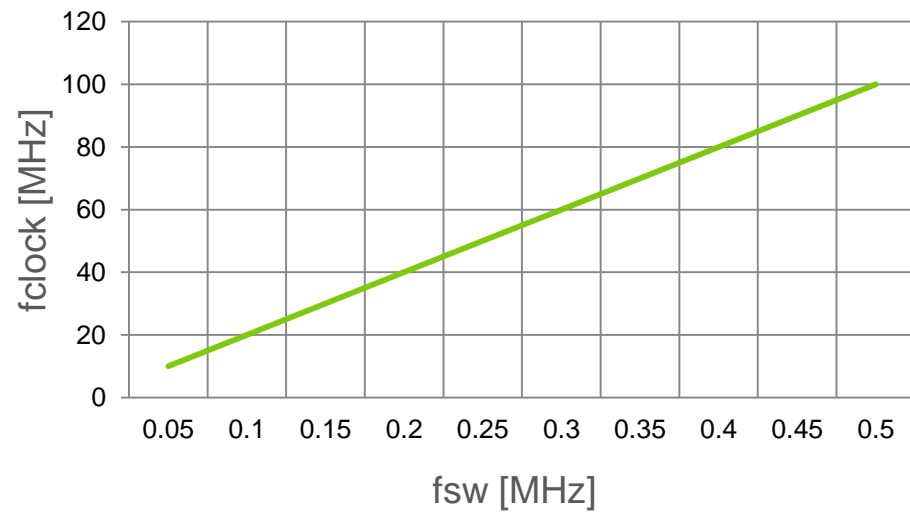


Challenges

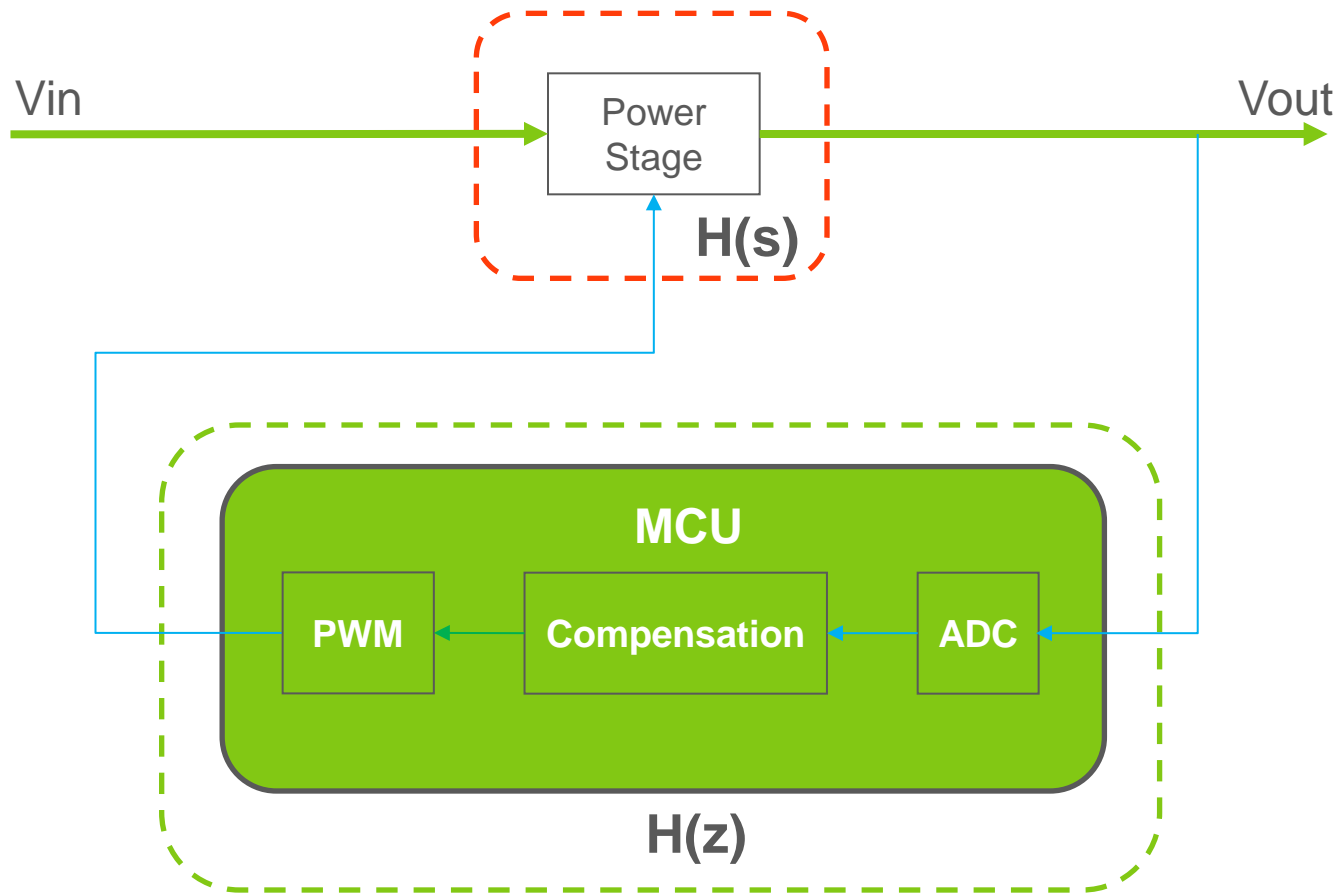
Microcontroller requirements



D resolution 0.5%

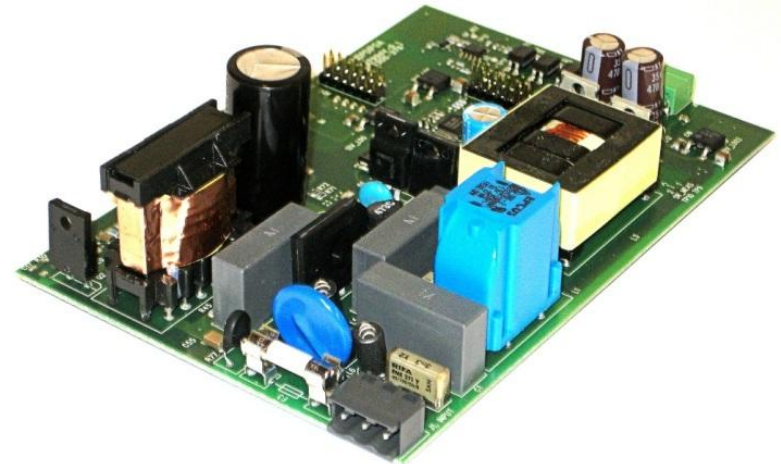


Challenges Compensation Design



Conclusion

- Digital power control offers several benefits
 - Efficiency optimization
 - Added intelligence
 - Platform reusability
- Challenges
 - High performance MCU
 - Deep understanding of power control theory



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THANK YOU!

Stand: 6k111
