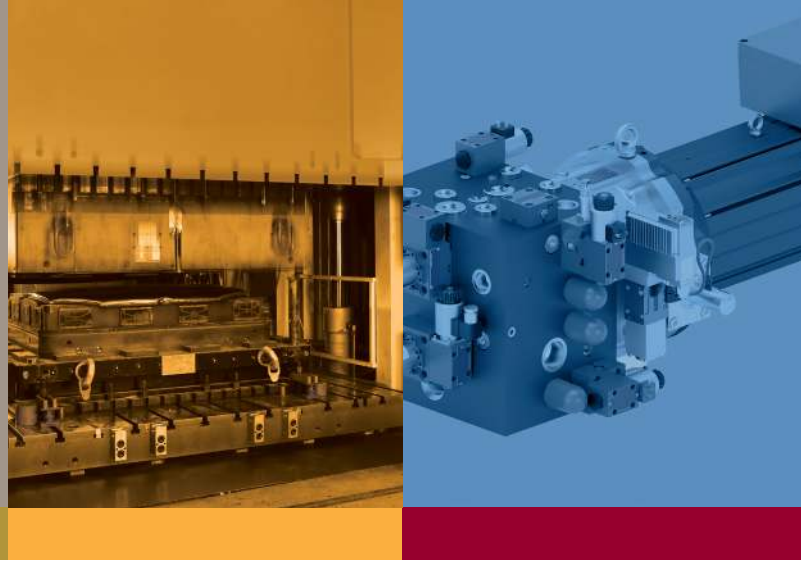


# MOOG ENERGY MANAGEMENT SYSTEM (EMS) FOR EAS



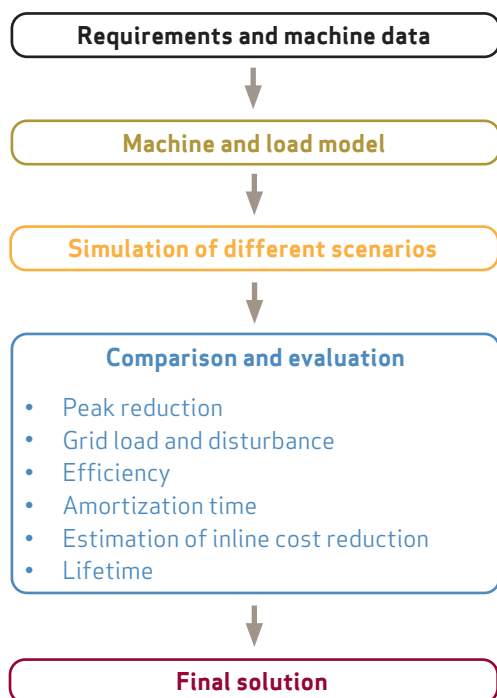
Modern machine designs are more and more based on Electrohydrostatic Actuation Systems (EAS) instead of valve-based throttle control. During this transformation, the installed power of the used EPU-axes and their Servo Drives often surpass the power of the formerly used hydraulic power unit, especially when hydraulic accumulators were used.

Moog combines the best fitting power infeed with storage units to reduce the installed power significantly. Together with the efficiency gain of the EAS and the peak power reduction of the Moog Energy Management System, hydraulic machines reach a new level of attractiveness.

The Energy Management System as add on to EAS provides multiple benefits to machine end-users and to OEMs. Additionally, the EMS can also be used for electromechanical actuation systems.

## MOOG EVALUATION PROCESS

Through in-depth simulation of the application including energy management, the best fitting storage and infeed is evaluated. In this process the customer is pro-actively consulted on energy savings, grid loading and amortization, amongst others.



## ADVANTAGES

- Reduces installed power significantly and thus in-line components up to the transformer (peak shaving)
- Maximizing machine efficiency through energy storing and minimizing losses
- Modular approach: For each application the right infeed and storage type

## APPLICATIONS

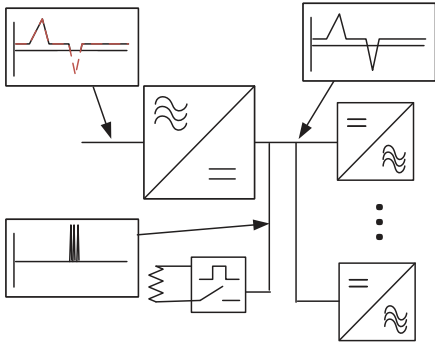
- Material testing and simulation platforms
- Cyclic high pressure compression axis
- Metal forming and presses



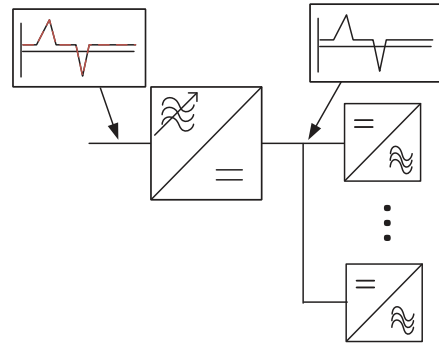
# SPECIFICATIONS

## EMS TOPOLOGIES

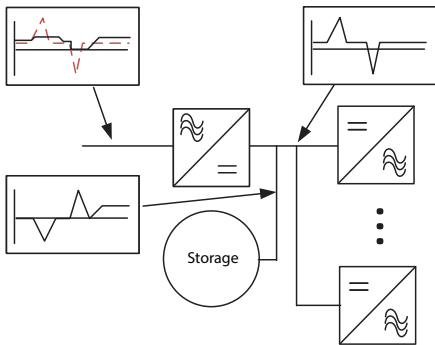
### Dissipative (AC-AC Drives with Brake Chopper)



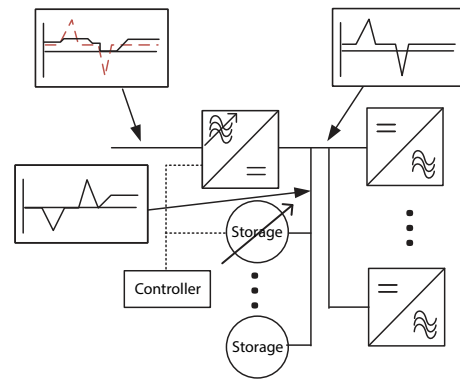
### Active Front End (Power Feedback to the Grid)



### Passive Storage (Peak Shaving Solution with Capacitors)



### Active Storage (Peak Shaving Solution with Active Storage)



## POWER RANGE & EXAMPLE APPLICATIONS

| Infeed type | Nominal power   | DC-bus voltage <sup>1)</sup> | Storage  | Peak power | Cycle energy | Peak power reduction factor | Application example   |
|-------------|-----------------|------------------------------|--|------------|--------------|-----------------------------|---|
| AC-DCDC     | 12 to 24 kW     | 430 V                        | Double layer capacitors (ESU-DL)                                   | < 100 kW   | > 25 kJ      | 10 to 25 %                  | Motion platforms  |
| AC-DCDC     | 12 to 24 kW     | 540 V                        | Electrolytic capacitors (ESU-C)                                    | < 250 kW   | < 10 kJ      | 10 to 25 %                  | Testing, high pressure compression, small presses (< 150 t) |
| PSU (AFE)   | 26 to 75 kW     | 700 V                        | Electrolytic capacitors (ESU-C)                                    | < 500 kW   | < 35 kJ      | 15 to 25 %                  | Mid size presses (< 300 t), large testing units             |
| PSU (AFE)   | 75 to 360 kW    | 700 V                        | Electrolytic capacitors (ESU-C) + double layer capacitors (ESU-DL) | > 500 kW   | > 35 kJ      | 20 to 30 %                  | Large presses, large hexapods                               |
| PSU (AFE)   | 250 to 1,500 kW | 700 V                        | Double layer capacitors (ESU-DL) and/or grid feedback, no storage  | > 500 kW   | > 300 kJ     | 35 to 100 %                 | Large presses with high forming energy                      |

<sup>1)</sup> At 400 V<sub>AC</sub> supply

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This technical data is based on current available information and is subject to change at any time. Specifications for specific systems or applications may vary.

Moog Energy Management System (EMS) for EAS  
KEM/Rev. A, November 2023, CDL66289-en

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