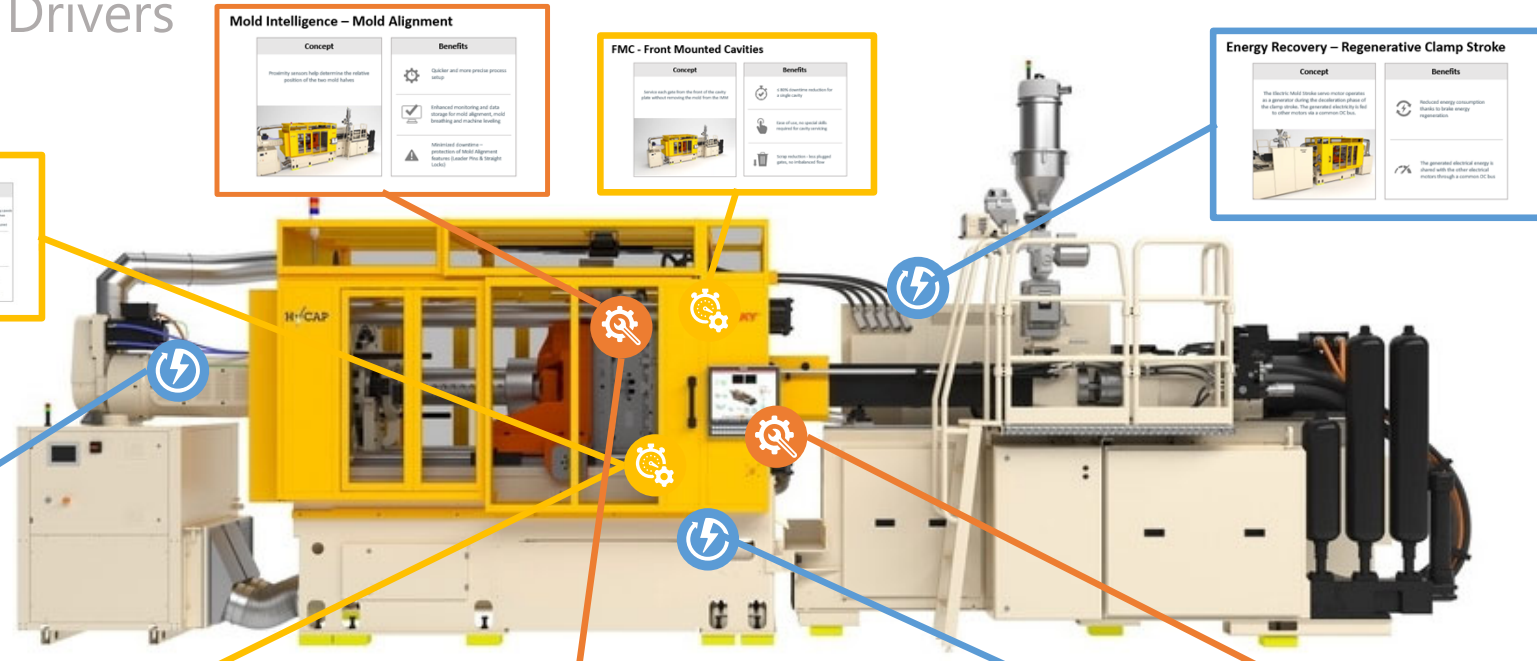


HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the main concerns with electric mold stroke: mold alignment and control.</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold setting Slides for short travel opening & closing strokes 	<p>Quick Start</p> <ul style="list-style-type: none"> Quick start-up Low maintenance Low energy consumption Low noise Low vibration Low heat <p>Reliability</p> <ul style="list-style-type: none"> Long life Low maintenance Low energy consumption Low noise Low vibration Low heat

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Proximity sensors help determine the relative position of the two mold halves.</p>	<ul style="list-style-type: none"> Quick and more precise process setup Infrared monitoring and data storage for mold alignment, mold tracking and machine tracking Advanced detection - protection of Mold Alignment System (under time & storage lock)

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the M&S.</p>	<ul style="list-style-type: none"> 30% shorter mold stroke for a high cavity Less of one or several slides required for each cavity Longer strokes, less weight, fewer mold strokes, maintenance free

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke servo motor operates as a generator during the retraction phase of the clamp stroke. The generated electricity that is otherwise dissipated as heat is fed back to other motors in a common DC bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical motors through a common DC bus

Electric Mold Stroke

Mold ID

Concept	Benefits
<p>The machine software automatically identifies the mold and cavity plates to reduce a manual operator effort. It adapts and transfers machine settings to the new mold.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Eject Assist

Concept	Benefits
<p>The machine software synchronizes the mold and cavity plates to reduce a manual operator effort. It adapts and transfers machine settings to the new mold.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Regenerative Clamp Stroke

Simplified Cooling Connections


Energy Efficiency

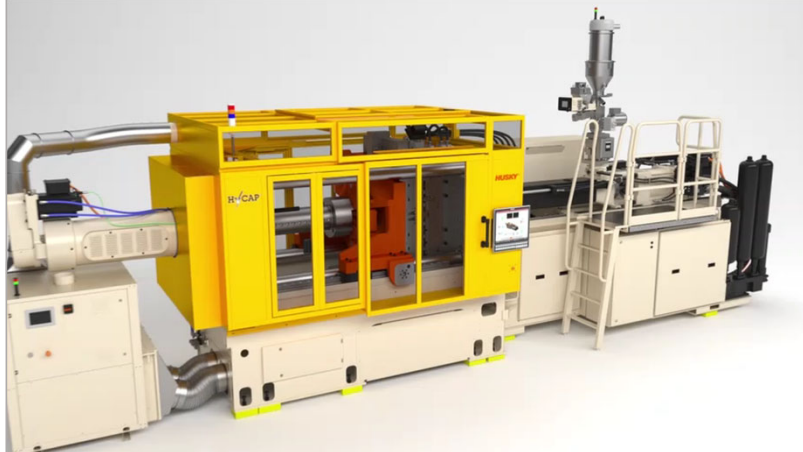

Productivity


Ease of Use

Mold Intelligence – Mold Alignment

Concept

Proximity sensors help determine the relative position of the two mold halves



Benefits



Quicker and more precise process setup

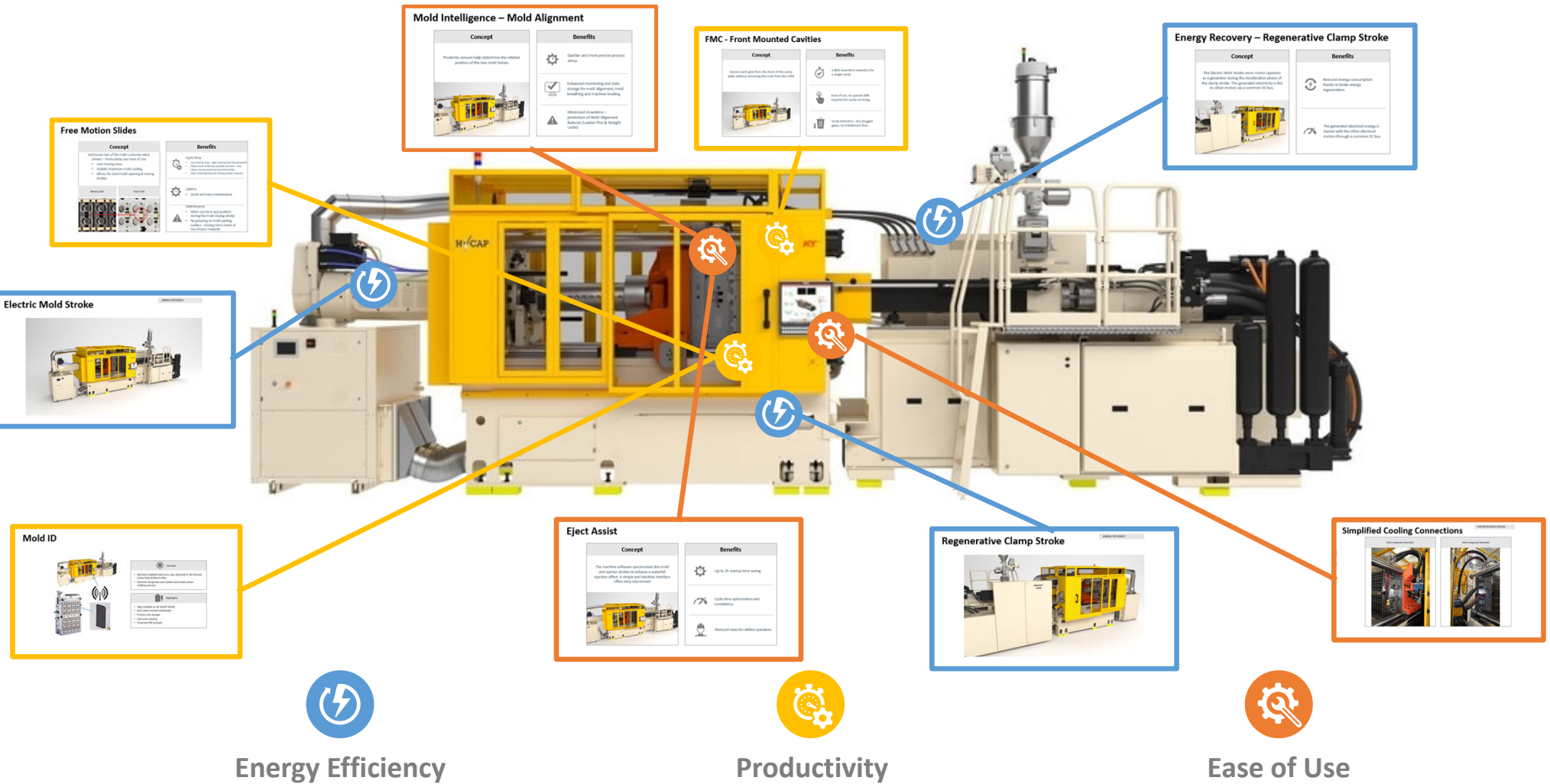


Enhanced monitoring and data storage for mold alignment, mold breathing and machine leveling



Minimized downtime – protection of Mold Alignment features (Leader Pins & Straight Locks)

HyCAP4 System



FMC - Front Mounted Cavities

Concept

Service each gate from the front of the cavity plate without removing the mold from the IMM



Benefits



≤ 80% downtime reduction for a single cavity



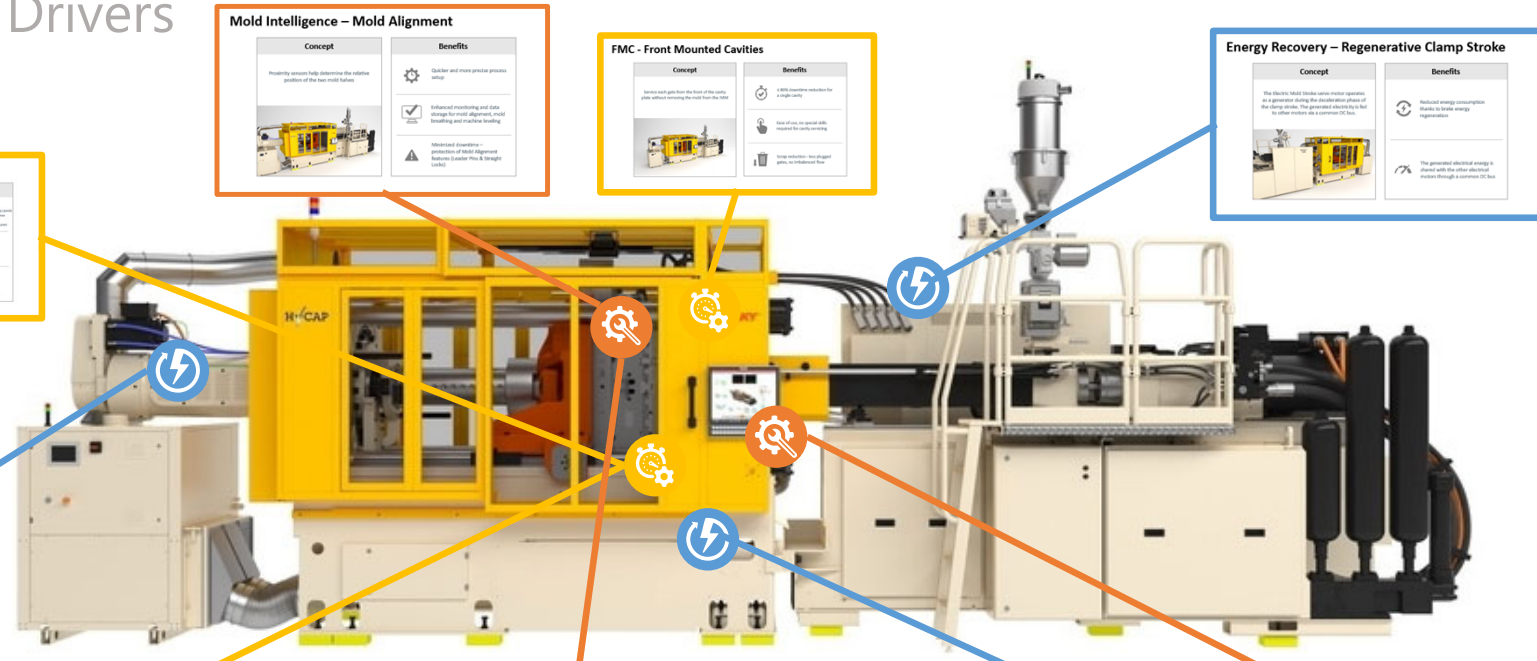
Ease of use, no special skills required for cavity servicing



Scrap reduction - less plugged gates, no imbalanced flow

HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the most common mold issues: moldability and ease of use.</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold opening Slides for short travel opening & closing 	<ul style="list-style-type: none"> Quick flow Low energy consumption Low maintenance Low noise Low wear Low cost

Mold Intelligence – Mold Alignment

Concept	Benefits
<p>Proximity sensors help determine the relative position of the two mold halves.</p>	<ul style="list-style-type: none"> Quick and more precise process setup Influenced monitoring and data storage for mold alignment, mold tracking and machine tracking Advanced detection: prevention of Mold Alignment beyond master time & storage locks

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the M&L.</p>	<ul style="list-style-type: none"> 30% shorter moldrunner & high safety Less of use, no special skills required for setup change Longer lifetime, less change parts, maintenance free

Energy Recovery – Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke sensor regulates a generator during the retraction phase of the clamp stroke. The generated electricity feeds other modules in a common DC bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical modules through a common DC bus

Electric Mold Stroke

Mold ID

Concept	Benefits
<p>The machine software automatically identifies the mold and adapts the process to the specific mold geometry.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Eject Assist

Concept	Benefits
<p>The machine software synchronizes the mold and ejection stroke to reduce a potential operator effort. It adapts the ejection stroke to the mold geometry.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Regenerative Clamp Stroke

Simplified Cooling Connections


Energy Efficiency


Productivity


Ease of Use

Energy Recovery – Regenerative Clamp Stroke

Concept

The Electric Mold Stroke servo motor operates as a generator during the deceleration phase of the clamp stroke. The generated electricity is fed to other motors via a common DC bus.



Benefits



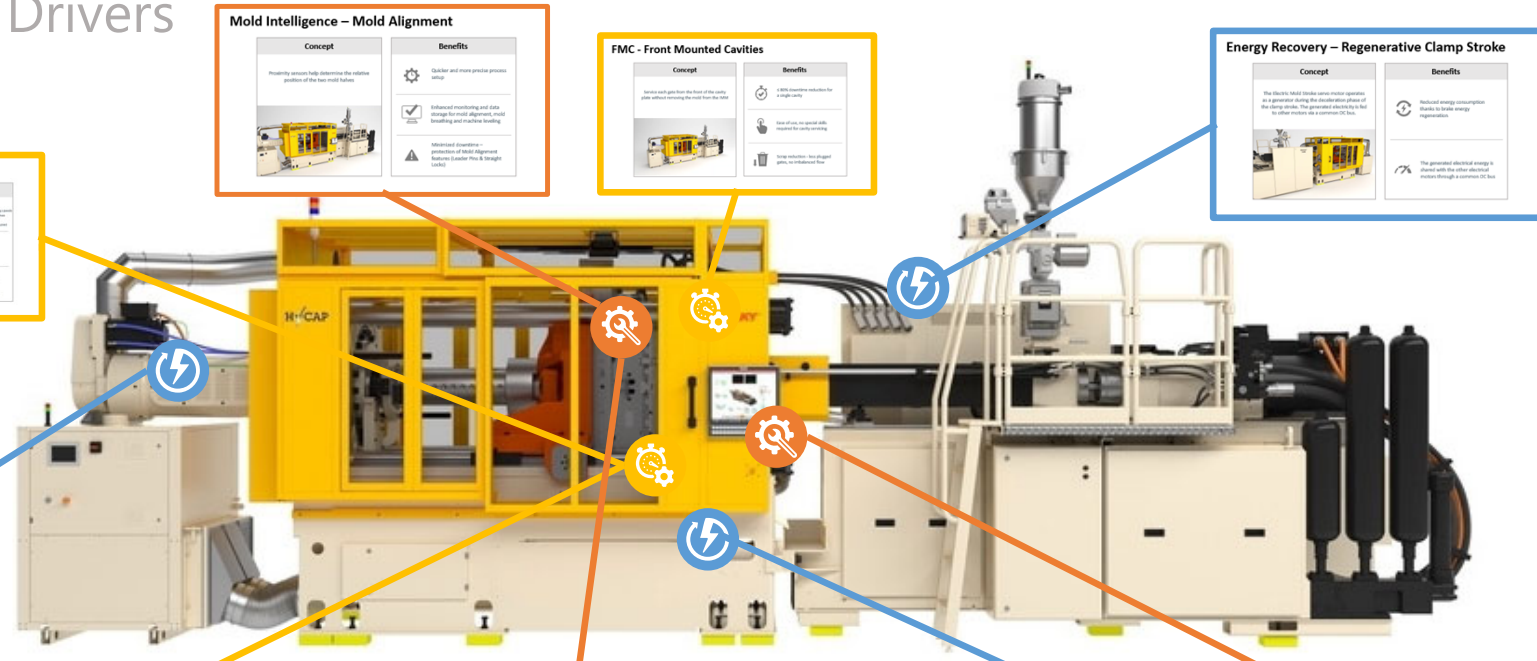
Reduced energy consumption thanks to brake energy regeneration



The generated electrical energy is shared with the other electrical motors through a common DC bus

HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Adjustment of the slide position can be done manually or via the touch screen.</p> <ul style="list-style-type: none"> Slide height adjustment Slide position adjustment Slide speed adjustment Slide stop position adjustment 	<ul style="list-style-type: none"> Quick change Reduced changeover time Reduced scrap Reduced downtime Reduced energy consumption

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Position sensors help determine the relative position of the two mold halves.</p>	<ul style="list-style-type: none"> Quick and more precise process setup Reduced monitoring and data storage for mold alignment, mold tracking and machine tracking Automatic generation of position of Mold Alignment Report (under View & Image Lock)

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the M&L.</p>	<ul style="list-style-type: none"> 100% cavity utilization for a high cavity Easy to use, no special skills required for setup change Simple solution, no digital gears, maintenance free

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke servo motor operates as a generator during the retraction phase of the clamp stroke. The generated electricity is fed to other motors in a common DC Bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical motors through a common DC Bus

Electric Mold Stroke

Mold ID

Concept	Benefits
<p>The machine software automatically identifies the mold and adapts the process to the specific mold geometry.</p>	<ul style="list-style-type: none"> Up to 10 changeover time saving Early time optimization and consistency Reduced need for skilled operators

Eject Assist

Concept	Benefits
<p>The machine software synchronizes the mold and ejector stroke to reduce a potential operator effort. It adapts the machine transfer offset every adjustment.</p>	<ul style="list-style-type: none"> Up to 10 changeover time saving Early time optimization and consistency Reduced need for skilled operators

Regenerative Clamp Stroke

Simplified Cooling Connections

 **Energy Efficiency**

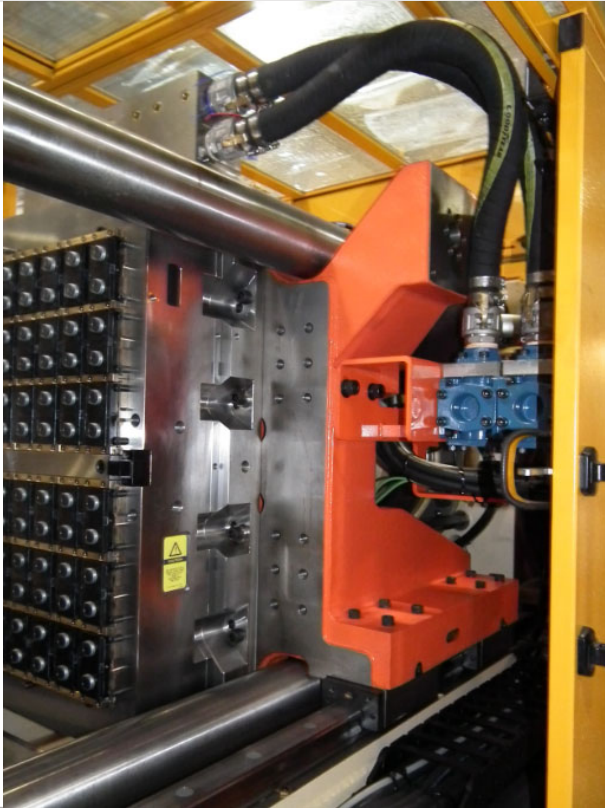
 **Productivity**

 **Ease of Use**

Simplified Cooling Connections

INTEGRATED MOLD COOLING

With Integrated Manifold

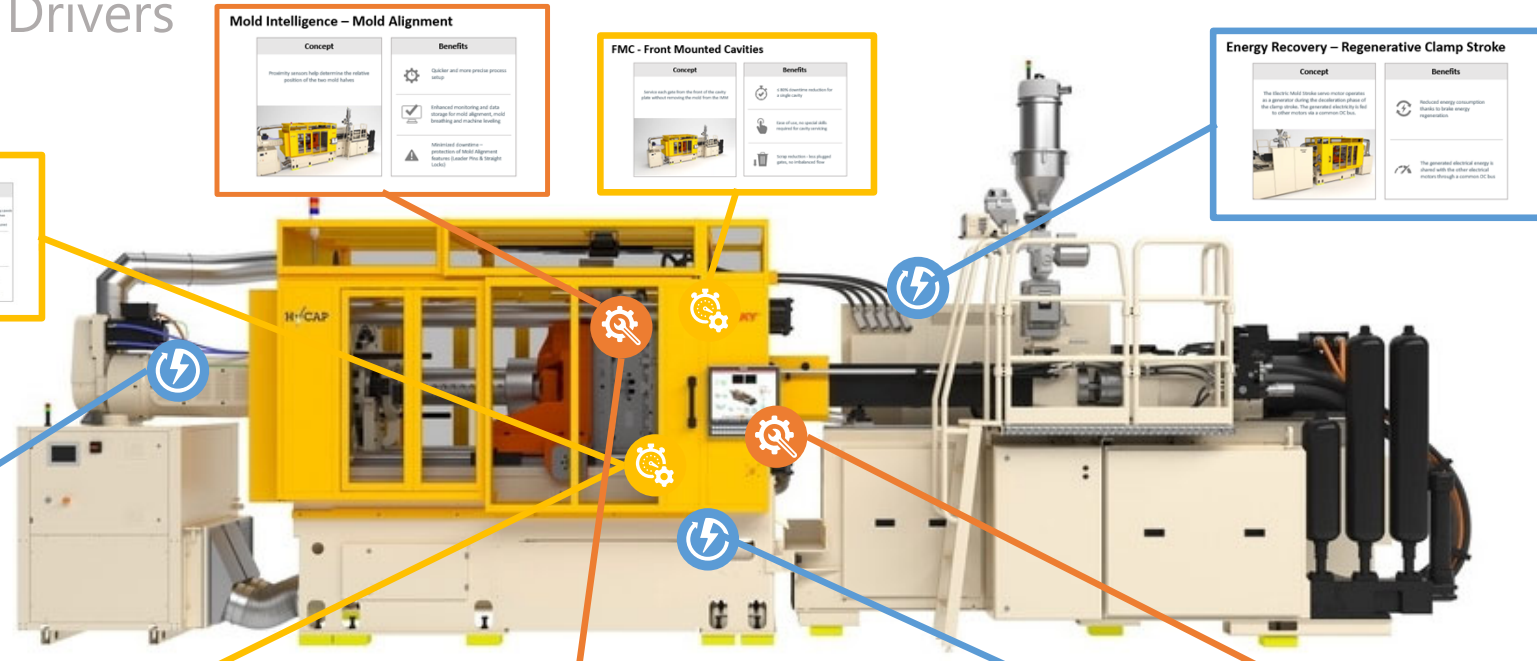


With Integrated Manifold



HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the most common mold issues: moldability and ease of use.</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold setting Slides for short travel opening & closing 	<ul style="list-style-type: none"> Quick flow Low energy consumption Low maintenance Low noise Low wear Low cost

Mold Intelligence – Mold Alignment

Concept	Benefits
<p>Flexibility allows help determine the relative position of the two mold halves.</p>	<ul style="list-style-type: none"> Quick and more precise process setup Influenced monitoring and data storage for real alignment, mold breaking and machine loading Advanced detection: prevention of Mold Alignment beyond master time & storage locks

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the M&C.</p>	<ul style="list-style-type: none"> 30% shorter moldmaker & high safety Less of use, no special skills required for mold setting Longer lifetime, less change parts, maintenance free

Energy Recovery – Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke servo motor operates as a generator during the retraction phase of the clamp stroke. The generated electricity that is then recirculated in a common DC bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical systems through a common DC bus

Electric Mold Stroke

Mold ID

Concept	Benefits
<p>The machine software automatically identifies the mold and adapts the process to the specific mold geometry.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Eject Assist

Concept	Benefits
<p>The machine software synchronizes the mold and ejector stroke to reduce a potential operator effort. It adapts the machine transfer effort every 100 milliseconds.</p>	<ul style="list-style-type: none"> Up to 10x setup time saving Early time optimization and consistency Reduced need for skilled operators

Regenerative Clamp Stroke

Simplified Cooling Connections


Energy Efficiency


Productivity


Ease of Use

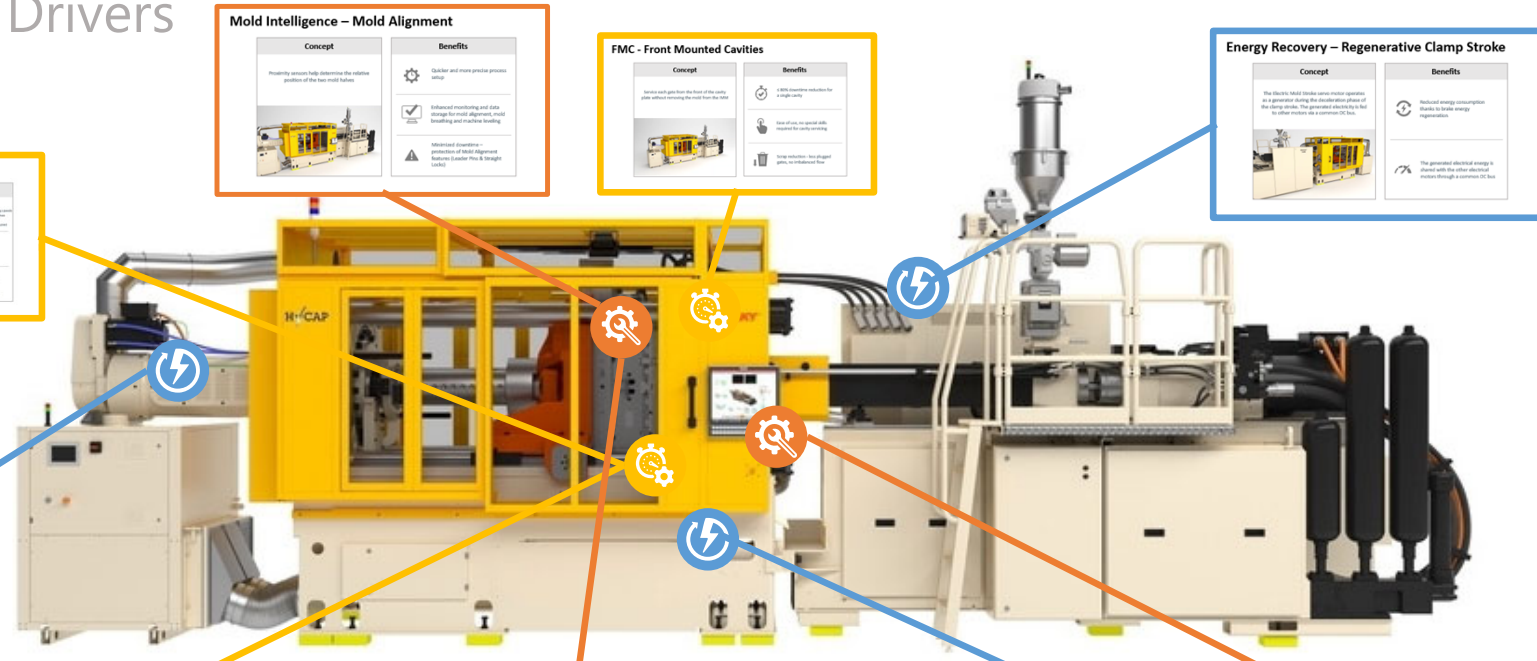
Regenerative Clamp Stroke

ENERGY EFFICIENCY



HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the main constraints of injection molding and ejection of parts:</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold opening Slides for short travel opening & closing 	<p>Quick Start</p> <ul style="list-style-type: none"> Low friction, low maintenance Low energy consumption Low wear and tear Low maintenance costs <p>Reliability</p> <ul style="list-style-type: none"> Long life cycle High precision and accuracy Low maintenance costs Low energy consumption

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Flexibility allows help determine the relative position of the two mold halves</p>	<ul style="list-style-type: none"> Quick and more precise process setup Influenced monitoring and data storage for mold alignment, mold tracking and machine tracking Advanced detection - prevention of Mold Alignment beyond master time & storage locks

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the MIM</p>	<ul style="list-style-type: none"> 30% shorter moldrunner & high safety Less of use on special die, required for each cavity Long lifetime, low weight, easy maintenance

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke servo motor operates as a generator during the retraction phase of the clamp stroke. The generated electricity that is then recirculated in a common DC Bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical systems through a common DC Bus


Energy Efficiency


Productivity


Ease of Use

Eject Assist

Concept

The machine software synchronizes the mold and ejector strokes to achieve a waterfall ejection effect. A simple and intuitive interface offers easy adjustment



Benefits



Up to 2h startup time saving



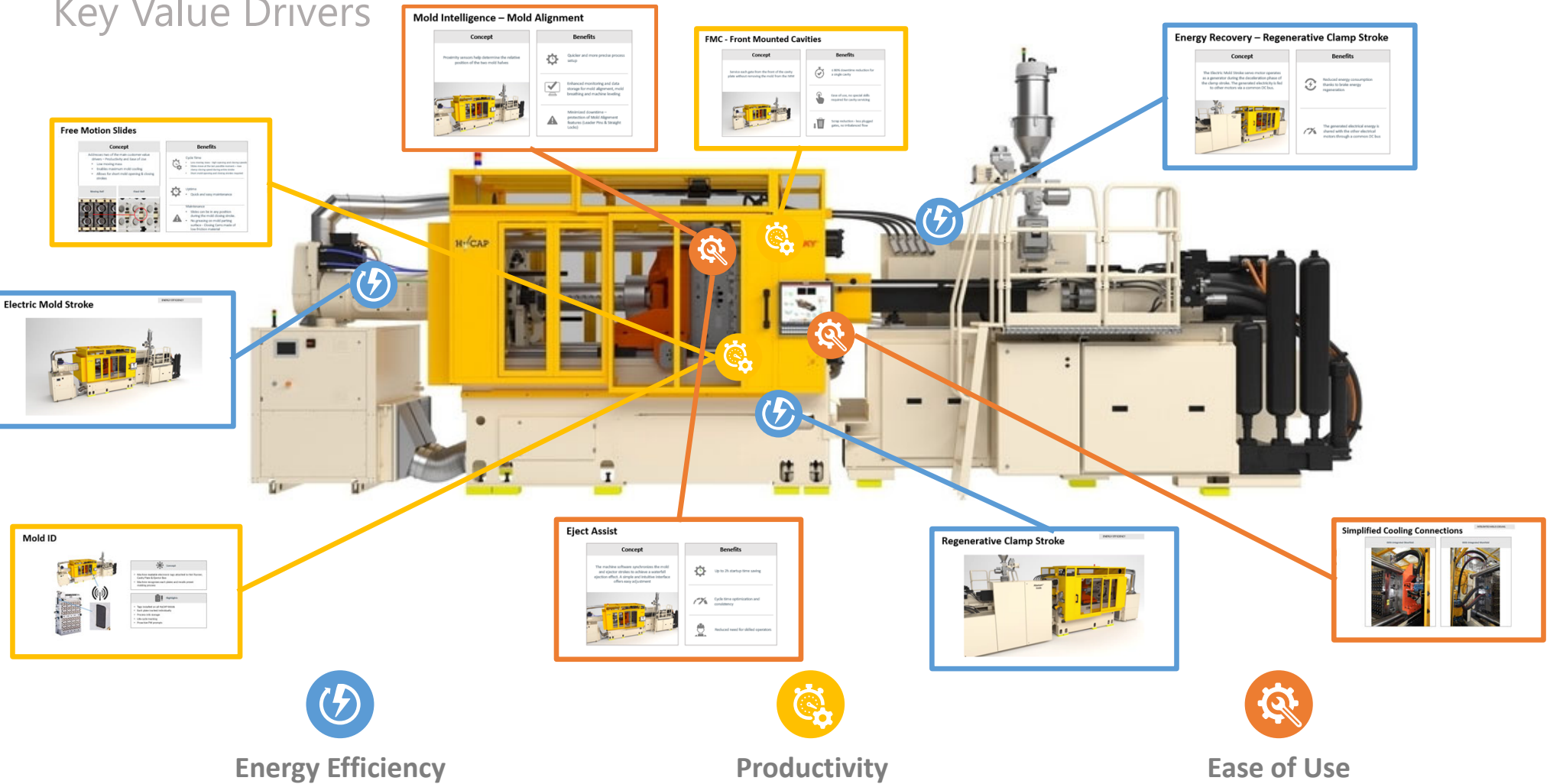
Cycle time optimization and consistency



Reduced need for skilled operators

HyCAP4 System

Key Value Drivers



Eject Assist

Concept



Benefits



Up to 2h startup time saving



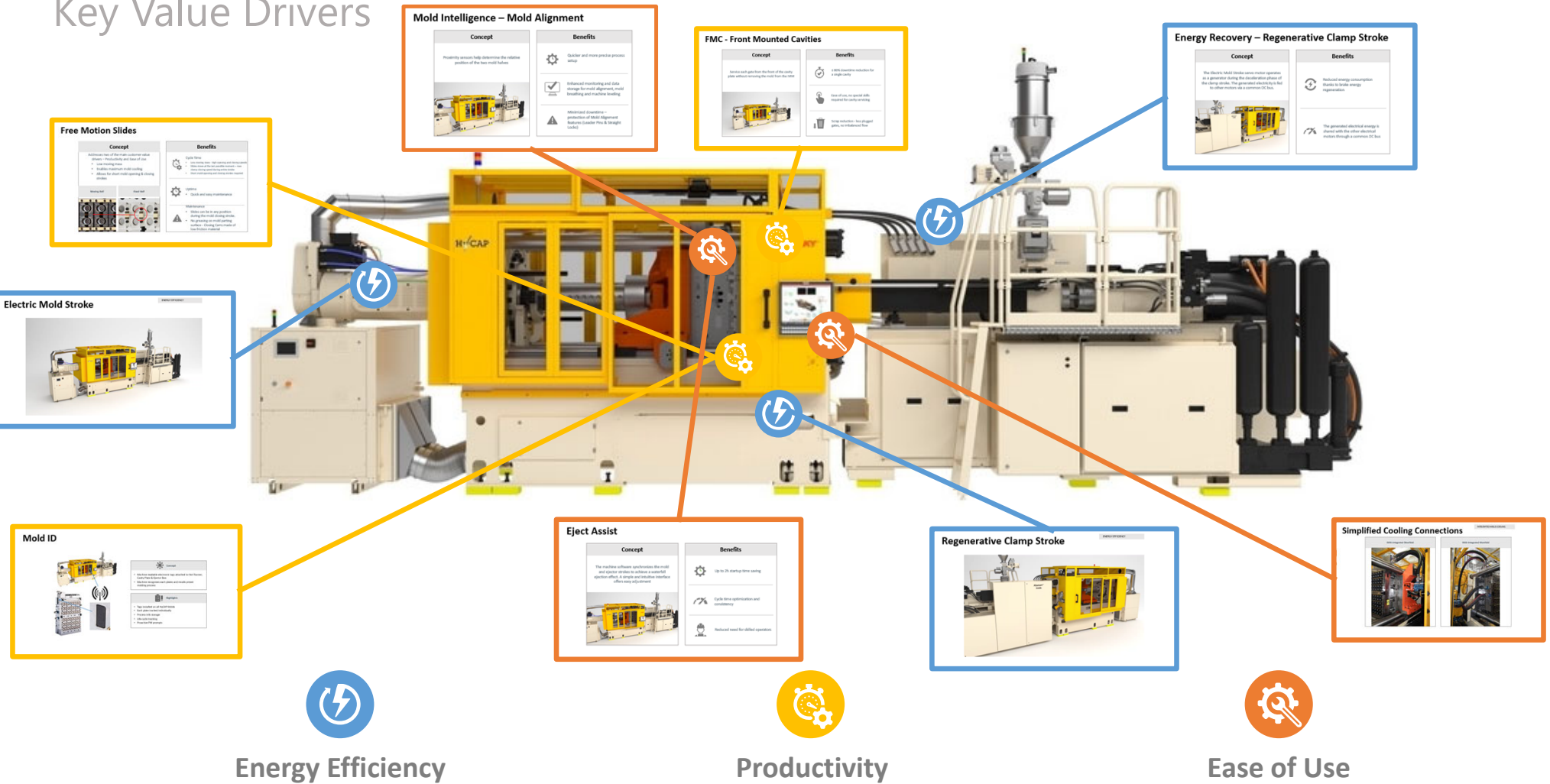
Cycle time optimization and consistency



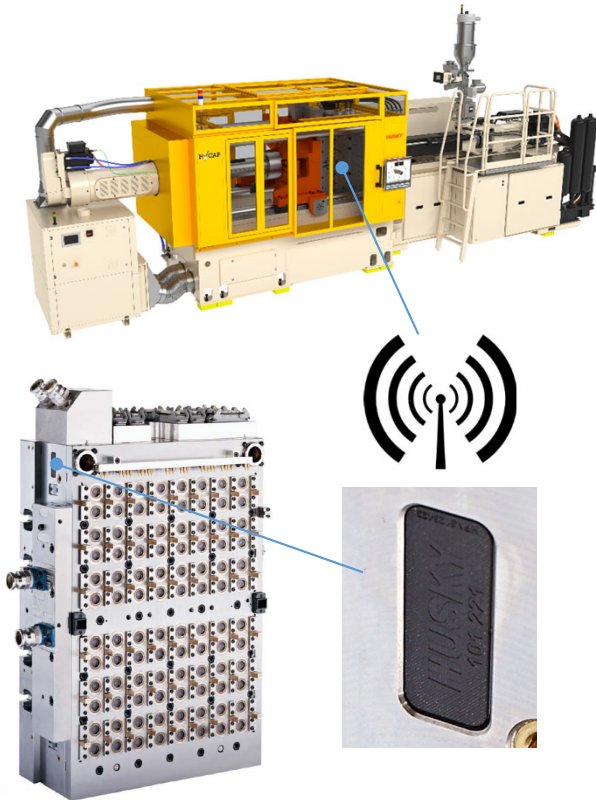
Reduced need for skilled operators

HyCAP4 System

Key Value Drivers



Mold ID



Concept

- Machine readable electronic tags attached to Hot Runner, Cavity Plate & Ejector Box
- Machine recognizes each plates and recalls preset molding process

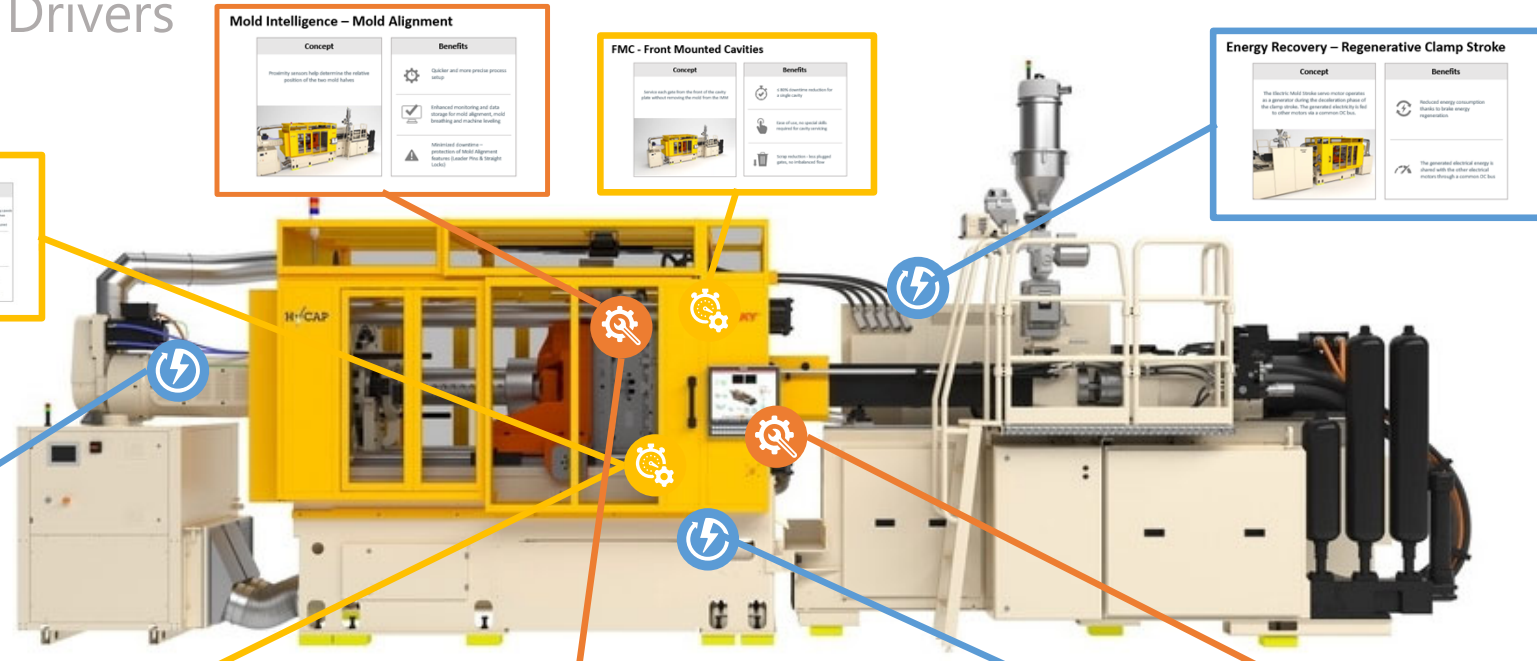


Highlights

- Tags installed on all HyCAP Molds
- Each plate tracked individually
- Process info storage
- Life-cycle tracking
- Proactive PM prompts

HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the main constraints of injection molding and ejection of parts:</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold opening Slides for short travel opening & closing 	<p>Quick Start</p> <ul style="list-style-type: none"> Low friction, low maintenance Low energy consumption Low wear and tear Low maintenance <p>Reliability</p> <ul style="list-style-type: none"> Highly precise mold opening and closing Highly consistent mold opening and closing Highly consistent mold opening and closing

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Proximity sensors help determine the relative position of the two mold halves</p>	<ul style="list-style-type: none"> Quick and more precise process setup Influenced monitoring and data storage for mold alignment, mold tracking and machine tracking Advanced detection of position of Mold Alignment Sensors (under time & weight locks)

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the MIM</p>	<ul style="list-style-type: none"> 30% shorter moldrunner & high safety Less of use on special die, required for each cavity Longer lifetime, less change parts, maintenance free

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke sensor regulates a generator during the retraction phase of the clamp stroke. The generated electricity feeds other modules in a common DC Bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical systems through a common DC Bus


Energy Efficiency


Productivity


Ease of Use

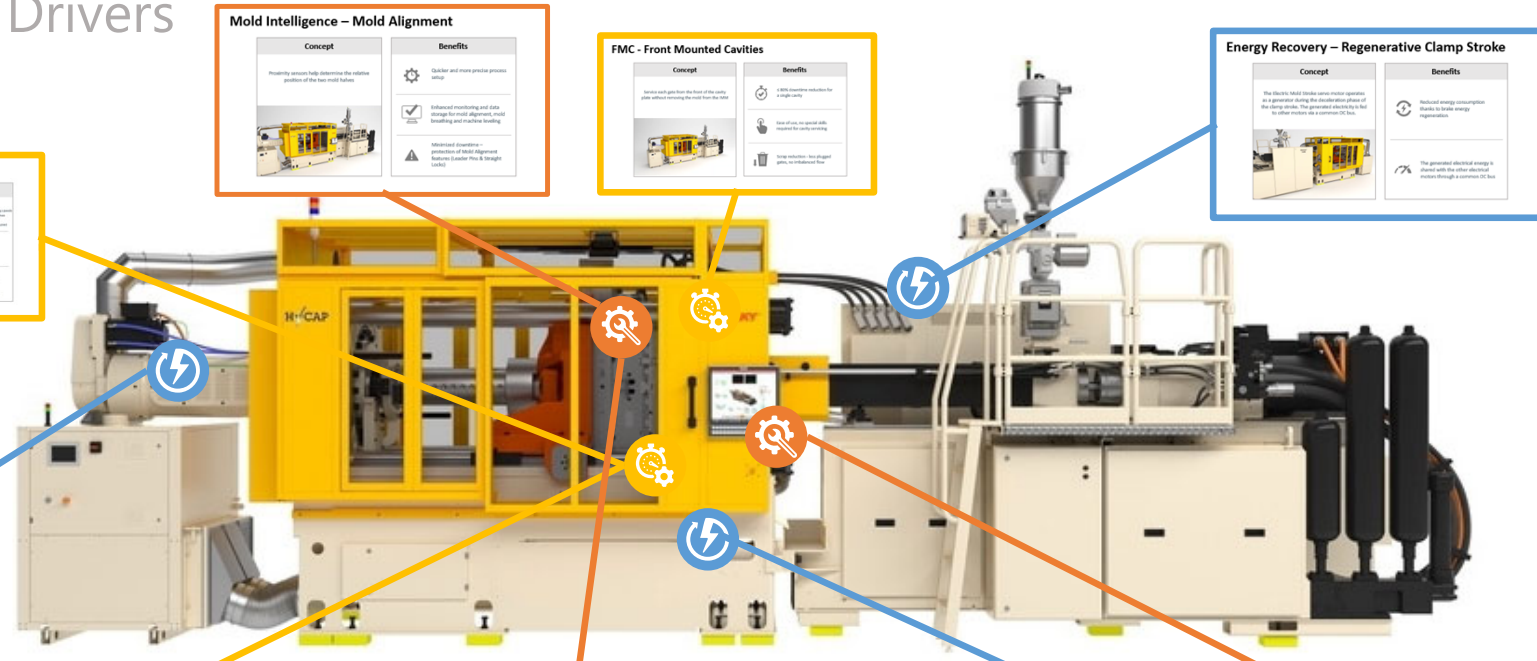
Electric Mold Stroke

ENERGY EFFICIENCY



HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the main constraints of injection molding and ejection of parts:</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold opening Slides for short travel opening & closing 	<p>Quick Start</p> <ul style="list-style-type: none"> Low friction, low maintenance Low energy consumption Low wear and tear Low maintenance costs <p>Reliability</p> <ul style="list-style-type: none"> Highly precise mold opening and closing Highly consistent mold opening and closing Highly consistent mold opening and closing

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Proximity sensors help determine the relative position of the two mold halves</p>	<ul style="list-style-type: none"> Quick and more precise process setup Influenced monitoring and data storage for mold alignment, mold tracking and machine tracking Advanced detection of position of Mold Alignment Sensors (under time & weight locks)

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the MIM</p>	<ul style="list-style-type: none"> 30% shorter moldrunner & high safety Less of use on special die, required for each cavity Longer lifetime, less change parts, maintenance free

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke sensor regulates a generator during the retraction phase of the clamp stroke. The generated electricity feeds other modules in a common DC Bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical modules through a common DC Bus


Energy Efficiency


Productivity


Ease of Use

Electric Mold Stroke

Mold ID

Eject Assist

Concept	Benefits
<p>The machine software synchronizes the mold and ejection stroke to reduce a potential operator effort. It adapts and reduces transfer effort every adjustment.</p>	<ul style="list-style-type: none"> Up to 1% clamp time saving Early time optimization and consistency Reduced need for skilled operators

Regenerative Clamp Stroke

Simplified Cooling Connections

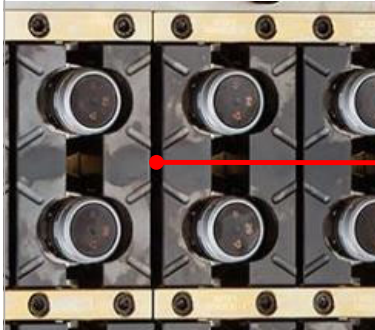
Free Motion Slides

Concept

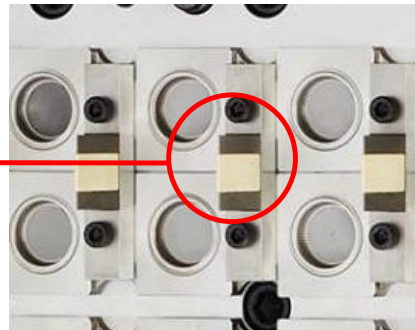
Addresses two of the main customer value drivers – Productivity and Ease of Use

- Low moving mass
- Enables maximum mold cooling
- Allows for short mold opening & closing strokes

Moving Half



Fixed Half



Benefits



Cycle Time

- Low moving mass - high opening and closing speeds
- Slides move at the last possible moment – max clamp closing speed during entire stroke
- Short mold opening and closing strokes required



Uptime

- Quick and easy maintenance

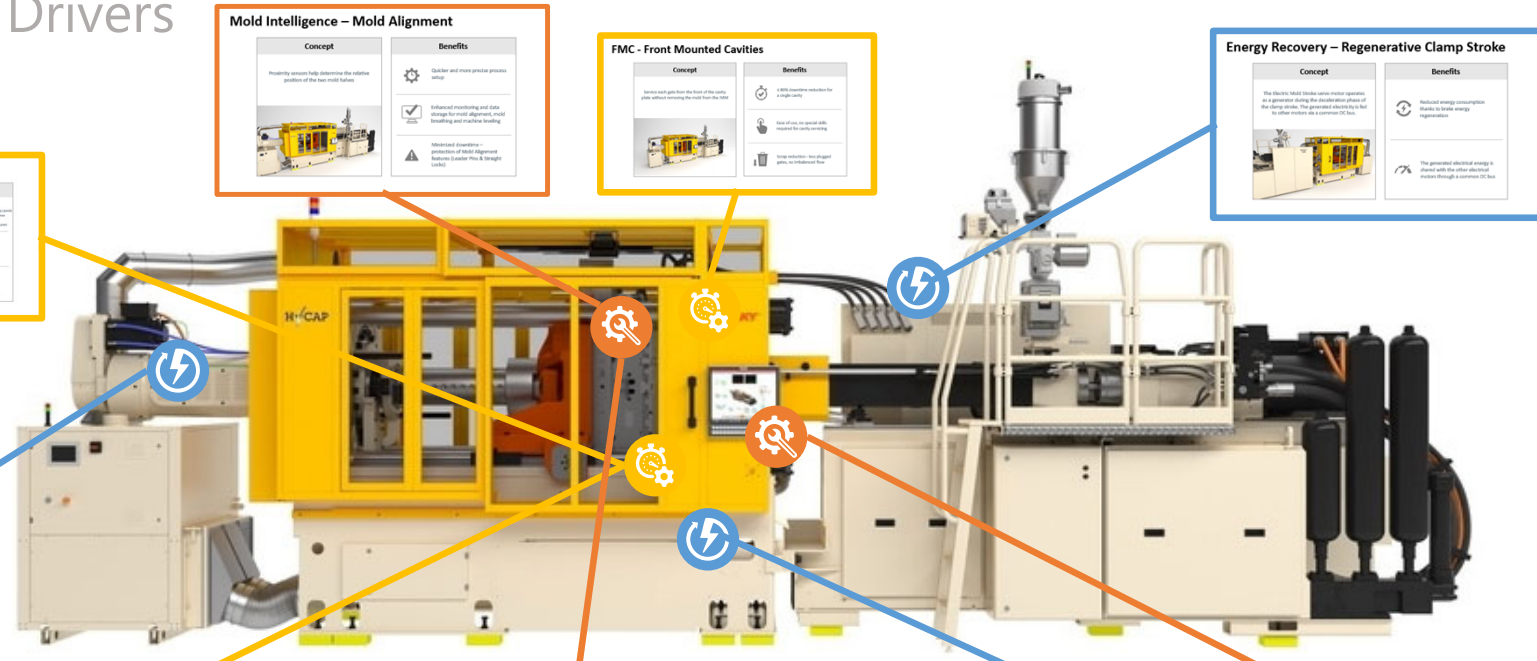


Maintenance

- Slides can be in any position during the mold closing stroke.
- No greasing on mold parting surface - Closing Cams made of low friction material

HyCAP4 System

Key Value Drivers



Free Motion Slides

Concept	Benefits
<p>Addresses one of the main constraints of injection molding and ejection of parts:</p> <ul style="list-style-type: none"> Low friction slides Stable, consistent mold opening Slides for short travel opening & closing 	<p>Quick Start</p> <ul style="list-style-type: none"> Low friction, low maintenance Low energy consumption Low wear and tear Low maintenance <p>Reliability</p> <ul style="list-style-type: none"> Long life cycle High precision High speed Low maintenance

Mold Intelligence - Mold Alignment

Concept	Benefits
<p>Flexibility allows help determine the relative position of the two mold halves</p>	<ul style="list-style-type: none"> Quick and more precise process setup Infrared monitoring and data storage for real alignment, mold tracking and machine tracking Advanced detection - protection of Mold Alignment System (under time & storage lock)

FMC - Front Mounted Cavities

Concept	Benefits
<p>Slides each part from the front of the cavity plate without moving the mold from the MIM</p>	<ul style="list-style-type: none"> 30% shorter mold runner & high safety Easy to use, no special skills required for setup change Long lifetime, low weight, good maintenance free

Energy Recovery - Regenerative Clamp Stroke

Concept	Benefits
<p>The Electric Mold Stroke servo motor operates as a generator during the retraction phase of the clamp stroke. The generated electricity that is then recirculated in a common DC Bus.</p>	<ul style="list-style-type: none"> Reduced energy consumption thanks to brake energy recuperation The generated electrical energy is stored with the other electrical systems through a common DC Bus


Energy Efficiency


Productivity


Ease of Use