

The background of the entire page is a grayscale photograph of an oilfield. In the foreground, several large, dark pipes run parallel to each other, receding into the distance. In the middle ground, a large pumpjack (oil pump) is visible, with its long walking beam extending across the frame. Other smaller pumpjacks are scattered in the background, set against a backdrop of rolling hills or mountains under a clear sky.

APPLICATION GUIDE

**A start is
just the
beginning**

AuCom
MOTOR CONTROL SPECIALISTS

**RIGHT FROM
THE START**



James Archer

Business Development
j.archer@aucom.com

Uncovering the hidden benefits: your guide to applying soft start

Every motor system is unique, and successful motor control involves careful consideration of many factors to create the optimal solution. As well as maximising productivity and ensuring smooth operation, you also need to protect your equipment and integrate motor control more intelligently into your broader application.

Our decades of experience in applying soft start to motor control, and working with partners across a broad array of industries and applications, have shown us how soft start can provide very real benefits to applications in nearly every industry. We've pulled that knowledge together into this guide, helping you understand where applying soft start brings the most benefit.

Is there an industry we need to include? Please let me know, or provide any feedback you have on the existing guide.

Contents



Building services 3



Food and beverage 4



Irrigation 5



Marine 6



Mining and quarrying 7



Oil and gas 8



Pulp and paper 9



Sawmilling 10



Water treatment 11



Water utilities 12



Soft starter benefits for BUILDING SERVICES

BENEFIT	FEATURE	COMPRESSOR	ESCALATOR	FAN	PUMP	MOVING WALKWAY
Protect equipment	Prevent damage due to reverse operation	Phase sequence	■	■	■	■
	Prevent damage from ammonia fluid	Instantaneous overcurrent	■			
	Prevent damage from misalignment of compressor screws		■			
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop			■	
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent			□	
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model		■	■	■
	Maximise operation during periods of high loading		■			
	Control compressor loading according to motor loading	Analog output	■			
Smoother operation	Minimise stress on electrical supply	Reduced start current	■	■	■	■
	Reduce mechanical stress during start		■		■	
	Smooth start for passengers	Gentle acceleration		■		■
	Minimise pressure surges				■	
Intelligent control of the whole system	Override motor and system protections in emergency situations eg fire pumps	Emergency run			■	
	Simplify control circuits by directly connecting pressure switches	Digital inputs			■	

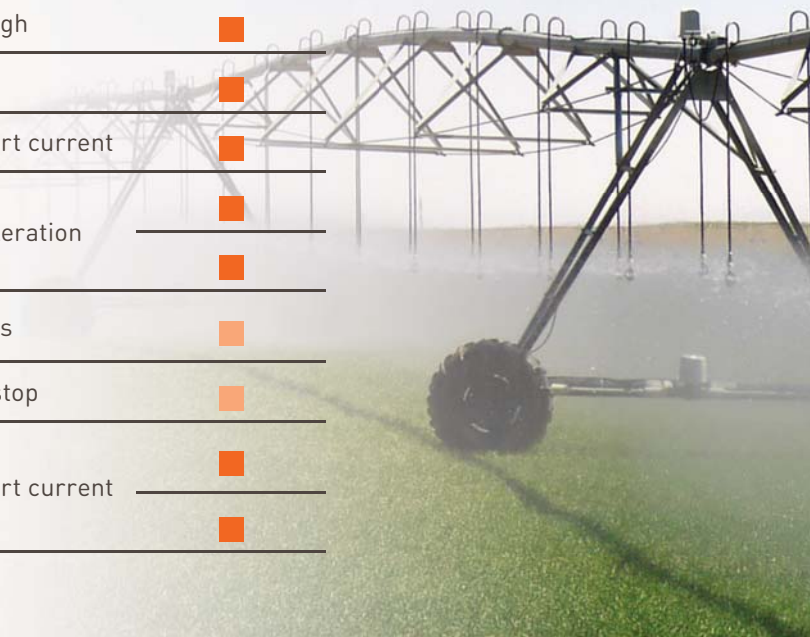
Soft starter benefits for FOOD & BEVERAGE APPLICATIONS

BENEFIT	FEATURE	AUGER	BLOWER/ FAN	CENTRIFUGE	COMPRESSOR	MILL, ROLLER	MIXER	PELLETISER	PUMP	SEPARATOR	SLICER	STIRRER
Protect equipment	Prevent damage due to reverse operation				■				■			
	Prevent damage from jammed loads	□				□	□	□	■		□	□
	Early warning of abnormal load conditions to detect broken couplings, blocked pipes etc		■		■				■			
Maximise productivity	Safely use full motor capacity without nuisance tripping	■	■	■	■	■	■	■	■	■	■	■
	Accurate motor protection during extended start			■						■		
	Ride through operating overloads eg large bones or frozen goods						■				■	
	Complete critical processes	■	□	□	■	■	■	□	■	□	■	■
	Control compressor loading according to motor loading					■						
Smoother operation	Control infeed conveyor speed based on motor loading	■				■	■	■	■	■	■	■
	Minimise stress on electrical supply	■	■	■	■	■	■	■	■	■	■	■
	Reduce mechanical stress during start	■	■	■	■	■	■	■	■	■	■	■
Intelligent control of the whole system	Simplify control circuits by directly connecting external switches				■	■	■	■	■		■	
	Override motor and system protections in emergency situations, eg fire pumps, ventilation fans	■	■			■						
	Improve system performance with closed loop process control			■								

Soft starter benefits for

IRRIGATION APPLICATIONS

BENEFIT	FEATURE	PUMP	
Protect equipment	Prevent damage due to reverse operation	Phase sequence	■
	Prevent damage from debris in water	Instantaneous overcurrent	■
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop	■
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent	■
	Extend life of pumps and pipes by protecting against extremes of pressure, depth or flow	Digital inputs	■
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model	■
	Complete critical processes	PowerThrough	■
	Automate restarting after temporary disturbances	Auto reset	■
Smoother operation	Minimise stress on electrical supply	Reduced start current	■
	Reduce mechanical stress during start	Gentle acceleration	■
	Minimise pressure surges		■
Intelligent control of the whole system	Simplify control circuits by directly connecting pressure, depth and flow switches	Digital inputs	■
	Specify start and stop times	Auto-start/stop	■
Reduce capital cost	Reduce infrastructure costs by using smaller supply transformers and pole fuses	Reduced start current	■
	Start additional pumps using existing supply capacity		■



Soft starter benefits for MARINE APPLICATIONS

BENEFIT	FEATURE	BLOWER/ FAN	BOW THRUSTER	COMPRESSOR	HYDRAULIC POWER PACK	PUMP	WINCH
Protect equipment	Prevent damage due to reverse operation		■	■	□	■	
	Prevent damage from jammed loads					■	■
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer					■	
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)			■	□	■	
	Smooth take-up with gradual tensioning						■
Maximise productivity	Safely use full motor capacity without nuisance tripping	■	■	■	■	■	■
	Complete critical processes	□	■	□		■	■
Smoother operation	Minimise stress on electrical supply	■	■	■	■	■	■
	Reduce mechanical stress during start	■	■	■	■	■	■
Intelligent control of the whole system	Override motor and system protections in emergency situations, eg fire pumps, ventilation fans	■	■			■	
	Simplify control circuits by directly connecting pressure switches			■		■	
	Improve system performance with closed loop process control			■			



Soft starter benefits for MINING & QUARRYING APPLICATIONS

BENEFIT	FEATURE	AUGER	COMPRESSOR	CONVEYOR	CRUSHER	MILL	PUMP	VIBRATING SCREEN
Protect equipment	Prevent damage due to reverse operation	Phase sequence	☐	■	■	■	■	
	Prevent damage from jammed loads	Instantaneous overcurrent	■		■	■	■	■
	Minimise belt stretch and belt slap	Gentle acceleration			■			
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop					■	
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent	☐			■		■
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model			■	■		■
	Maximise operation during periods of high loading			■	■	■		
	Complete critical processes	PowerThrough			☐			☐
	Start when loaded or unloaded	Current ramp			■			
	Control equipment loading according to motor loading	Analog output		■		■	■	
Smoother operation	Minimise stress on electrical supply	Reduced start current	■	■	■	■	■	■
	Reduce mechanical stress during start	Gentle acceleration	■	■	■	■	■	■
Intelligent control of the whole system	Simplify control circuits by directly connecting pressure switches	Digital inputs		■		■	■	

Soft starter benefits for OIL & GAS APPLICATIONS

BENEFIT	FEATURE	BLOWER/FAN	CENTRIFUGE	COMPRESSOR	PUMP
Protect equipment	Prevent damage due to reverse operation	Phase sequence	☐	■	■
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop			■
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent	☐	■	■
	Prevent belt breakages	Gentle acceleration	☐		
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model	■	■	■
	Complete critical processes	PowerThrough	■	■	■
Smoother operation	Minimise stress on electrical supply	Reduced start current	■	■	■
	Reduce mechanical stress during start	Gentle acceleration	■	■	■
	Minimise pressure surges				■
Intelligent control of the whole system	Simplify control circuits by directly connecting pressure switches	Digital inputs		■	■
	Improve system performance with closed loop process control	Analog output			■

Soft starter benefits for PULP & PAPER APPLICATIONS

BENEFIT	FEATURE	BLOWER/ FAN	CHIPPER	PUMP	RE-PULPER	SHREDDER	STIRRER	
Protect equipment	Prevent damage due to reverse operation	Phase sequence	■	□	■			
	Prevent damage from jammed loads	Instantaneous overcurrent		■	■		■	
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop			■			
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent	□	■	■	■	■	□
	Prevent belt breakages	Gentle acceleration	□					
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model		■	■	■		
	Expedite replacement of cutting heads	Soft braking		■				
	Complete critical processes	PowerThrough	□	□	■	□	□	□
Smoother operation	Minimise stress on electrical supply	Reduced start current	■	■	■	■	■	■
	Reduce mechanical stress during start	Gentle acceleration	■	■	■	■	■	■
Intelligent control of the whole system	Simplify control circuits by directly connecting pressure switches	Digital inputs		■		■	■	

Soft starter benefits for SAWMILLING APPLICATIONS

BENEFIT	FEATURE	BANDSAW	BLOWER/ FAN	CHIPPER	CIRCULAR SAW	CONVEYOR	DEBARKER	EDGER	PLANER	SHREDDER	SLABBER
Protect equipment	Prevent damage due to reverse operation	Phase sequence	■	■	□	□	□	□	□	□	□
	Prevent damage from jammed loads	Instantaneous overcurrent	■	■	■	■	■	■	■	■	■
	Prevent saw band stretch	Gentle acceleration	■								
	Prevent blade misalignment at start		■					■			
Maximise productivity	Safely use full motor capacity without nuisance tripping	Motor thermal model		□		□	□				
	Maximise operation during periods of high loading		■	■	■	■	■	■	■	■	■
	Expedite replacement of saw bands and chipper cutting heads	Soft braking / DC brake	■		■			■			
	Assist alignment of newly fitted saw bands and blades	Jog	■								
	Start when unloaded and loaded	Current ramp					■				
Smoother operation	Complete critical processes	PowerThrough	□	□	□	□	■	□	□	□	□
	Control infeed conveyor speed based on motor loading	Analog output	■	■	■	■	■	■	■	■	■
	Minimise stress on electrical supply	Reduced start current	■	■	■	■	■	■	■	■	■
	Reduce mechanical stress during start	Gentle acceleration	■	■	■	■	■	■	■	■	■
Intelligent control of the whole system	Interface with metal detection equipment	Auxiliary trip	■		■	■	■	■	■	■	■

Soft starter benefits for WATER TREATMENT APPLICATIONS

BENEFIT	FEATURE	AERATOR	BLOWER / FAN	MILLISCREEN	PUMP	SEPARATOR
Protect equipment	Prevent damage due to reverse operation			■	■	
	Prevent damage from debris in water		■		■	
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer				■	
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	■	■	■	■	■
	Prevent chain breakages			■		
Maximise productivity	Safely use full motor capacity without nuisance tripping	■	■	■	■	■
	Complete critical processes	□	■	■	■	■
Smoother operation	Minimise stress on electrical supply	■	■	■	■	■
	Reduce mechanical stress during start	■	■	■	■	■
	Minimise pressure surges				■	
	Keep aerator stable during start	■				
Intelligent control of the whole system	Simplify control circuits by directly connecting pressure switches				■	

Soft starter benefits for
WATER UTILITY APPLICATIONS

BENEFIT	FEATURE	MILLISCREEN	PUMP	SEPARATOR
Protect equipment	Prevent damage due to reverse operation	Phase sequence	■	■
	Prevent damage from debris in water	Instantaneous overcurrent	■	
	Prolong life of pumps, pipes, valves and headworks by preventing water hammer	Soft stop	■	
	Early warning of abnormal load conditions (broken couplings, blocked pipes etc)	Undercurrent	■	■
Maximise productivity	Prevent chain breakages	Gentle acceleration	■	■
	Safely use full motor capacity without nuisance tripping	Motor thermal model	■	■
Smoother operation	Keep critical process running	PowerThrough	■	■
	Minimise stress on electrical supply	Reduced start current	■	■
	Reduce mechanical stress during start	Gentle acceleration	■	■
Intelligent control of the whole system	Minimise pressure surges		■	
	Simplify control circuits by directly connecting pressure switches	Digital inputs	■	



About AuCom

AuCom's expertise and knowledge extends well beyond the products we make. We're about helping you achieve efficient and effective control of your machines and processes no matter what the industry or application.

Almost 40 years of experience added to our expertise and ability mean you can rely on us to get it right from the start.

New Zealand

123 Wrights Road, PO Box 80208, Christchurch 8440, New Zealand
T +64 3 338 8280 F +64 3 338 8104

China

203-1 JH Plaza, 2008 Huqingping Road, Shanghai 201702, China
T +86 21 5877 5178 F +86 21 5877 6378


Germany

Borsigstraße 6, 48324 Sendenhorst, Germany
T +49 2526 93880 140 F +49 2526 93880 100

Middle East

10th Floor, Swiss Tower, Jumeirah Lakes Towers, Dubai, UAE
T +971 4279 8349 F +971 4279 8399

North America

2528 Lovi Road, Building 2-2A, Freedom, PA 15042, USA
T 855 928 2666 (855 9 AUCOM NA), +1 724 987 4952 F +1 724 510 3005
 <https://my.aucom.com>

For more information and your local contact visit www.aucom.com

AuCom
MOTOR CONTROL SPECIALISTS

**RIGHT FROM
THE START**