

CRANES AND LIFTING

THE DEDICATED RESOURCE FOR THE CRANE INDUSTRY / DECEMBER 2022

TAKING THE SHOCK OUT OF PILING



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ABSORBING THE SHOCK FROM PILING

Pilequip's range of Tünker rubber shock absorbers are taking the shock out of piling for leading civil construction and piling organisations.



The Tünkers rubber shock absorbers will help prevent general wear and tear on the crane

MITCHELL MARINE CONSTRUCTIONS

specialize in waterfront and marine construction. Matthew and his brother Chris Mitchell have over 30 years of combined experience in the sector. They started Mitchell Marine Constructions three years ago. Matthew and Chris explain more about the business and how closely it works with piling equipment specialist, Pilequip.

“Mitchell Marine Constructions specializes in marine construction. We find ourselves involved in a variety of projects including the construction of wharfs, bridges and boat ramps. More recently and following the floods in Brisbane, we now find ourselves working in the residential side of the construction sector and this work includes the demolition of existing pontoons and piles and fabricating and installing brand new ones.

“We manage a lot of work commercially as well, and this is for Brisbane City Council, MSQ, Port of Brisbane, and in early October we sent a crew to Sydney to work on the new Fish Markets development. We work up and down the East Coast of Australia, but primarily we’re based in Brisbane,” said Matt.

Chris discusses the capabilities of the Mitchell Marine Constructions fleet.

“We own a crane barge which is called ‘The Flea’. It’s a small but really versatile barge on the water, and it can be pushed with a tin boat. We own two work punts and what you call a pusher boat which is like a small tug.

“We’ve also just hired a piling barge, which is 45m by 14m and this has 120t Kobelco crane on it. Our driver for this piece of kit has been in the marine construction industry for 30 plus years. We’ve got riggers, dogmen, bridge and also wharf carpenters. We have a crew that varies from six to 10 guys and we ramp up when we need more resources especially when we win some of the bigger jobs,” said Chris.

“It’s a pretty versatile crew in terms of the marine construction industry and it is hard to get guys with experience on the water, but all our guys are well equipped and confident about working in and around the water and on barges and with cranes and all that,” he said.

Matthew goes on to discuss the piling

equipment supplied by Pilequip and the relationship he has with National Sales Manager David Hopkins.

“Piling is a big part of what we do, and the use of vibratory hammers and hydraulic hammers are essentially in our trade. We use Pilequip for all this equipment. We currently have got a 1223 ICE vibratory hammer on hire, which is a smaller vibrator, but ideal for the residential market. It’s compact, not too big and not too small, and it’s a really good hammer for the smaller steel piles.

“We have a job coming up and we’re going to hire a 6t or 7t Dawson hydraulic hammer. We generally always use Pilequip for our piling equipment requirements. They provide a great service and we have good relationship with David Hopkins, the National Sales Manager. We currently have a brand new vibratory hammer on hire which is ideal,” said Matthew.

Mitchell Marine Constructions was recently involved on a project which involved a vibratory hammer being attached to a hydraulic all terrain. Normally an application most crane hire companies will say no to because of the damage the vibrations can do to the crane. Chris explains how they were able to circumvent this problem.

“The Tünkers range of rubber shock absorbers was new to us, and we used it recently on a project in Grafton, where we were installing some piles with the vibratory hammer. Because we were using a hydraulic all terrain, if we hadn’t had the Tünkers rubber shock absorber we couldn’t have done the job to be honest.

During the testing, the Tünkers rubber shock absorbers reduced the vibration by up to 93%



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“The majority of crane hire companies we’ve dealt with, will not let a vibratory hammer operate on a hydraulic all terrain because of the damage the vibration can cause to the main boom and the structure of the crane.

“But we introduced the Tünkers rubber shock absorbers, which David had sent up to Grafton, to Wicks and Parker the crane hire

company we used. We installed four piles, two steel piles and two fiberglass piles, and the Tünkers range of rubber shock absorber took the shock out the vibration and worked a treat,” said Chris.

“It’s the first time we’ve ever used Tünkers rubber shock absorber and it’s the first time we’ve ever had a vibratory hammer on a hydraulic all terrain, and the

end result was great. There was minimal vibration and Wicks and Parker were happy and said they’ll be happy to hire a crane for a vibratory hammer application any time as long as there’s a Tünkers rubber shock absorber fixed to the crane.

“In terms of our projects, a hydraulic all terrain is ideal compared to mobilizing and setting up a lattice boom crane, which takes days and costs a lot of money, you can just get a hydraulic all terrain on site much quicker and more cost effectively,” he said.

Pilequip’s David Hopkins explains more about the impact vibration has on a crane and how the Tünkers rubber shock absorber helps to negate the problem.

“There are, typically, two types of vibratory hammers. There’s a Static-Moment Vibratory Hammer and a Variable Moment Hammer. The biggest issue with the Static-Moment hammers is when you turn them on, they spin through the low frequency until they get to their peak frequency. When it’s moving through the low frequency, it starts to shake. It’s a bit like an off-balanced front-load washing machine. When it’s a little bit off balance and starts to spin slow, it starts to jump around, but once it gets up quite fast, it quiets down.

“When it starts and stops, we get those really big shock load vibrations going up into the crane. It’s not good for the computers. It’s not good for any componentry on the crane itself and some of the crane OEMs state in their literature that they need to have shock absorber when using vibratory equipment,” he said.

“It’s not just the start and stopping of the equipment. There are heavy vibrations even at the peak frequency, particularly if you’re pulling up on the vibratory hammer, you’re still getting quite a lot of vibration going up through the crane line and into the crane. We found the Tünkers shock absorbers eliminate up to 75% of that shock load vibration and up to 93% of peak frequency vibration.”

Pilequip tested the shock absorbers in their yard, on their crane a 75t capacity crawler. They engaged VMS Australia, a specialist vibration monitoring company, to measure the vibration. VMS put up four different measuring points on the crane. Above the hook, at the top of the jib, midway on the boom, and in the cab.

“We tested the shock absorbers on a Static Movement Hammer, an ICE 32NF and we also tested a Variable Moment Hammer, a PVE 28VM. A Variable Moment Hammer doesn’t have that start and stop shock as I mentioned earlier. So essentially it doesn’t start vibrating until the frequency is high. But as soon as you start pulling on that vibrator, you get that same peak frequency vibration going up through the crane. That doesn’t change whether it’s variable moment or a normal frequency hammer.

“As I have said the Tünkers rubber shock absorbers reduced the vibration by up to 93%. Obviously, there are huge benefits for crane companies considering this product.

Anyone that owns a crane and is planning to put a vibratory hammer on it, utilizing the Tünkers rubber shock absorbers seems to be a fairly straight forward business decision



I’ve spoken to customers operating cranes and computer systems can’t handle the vibrations. It keeps resetting or it keeps getting errors.

“Obviously, the absorbers will help prevent general wear and tear on the crane. I’ve spoken to customers who have got a crane down because they started a big Static-Moment Hammer, the ropes were jumping around all over the place and this caused damage to a point where they couldn’t operate it anymore, they had to fix it,” said David.

Anyone that owns a crane and is planning to put a vibratory hammer on it, utilizing the Tünkers rubber shock absorbers seems to be

a fairly straight forward business decision to make says David.

“They’re relatively inexpensive to either rent or buy, when compared to the cost of a crane or fixing the damage vibration has caused your crane. It’s the unknown damage that needs to be considered. I don’t know if there’s any studies on the impact of long-term use of a vibratory hammer on your crane, but you can only assume that it would be significantly less when we’re talking about the vibration reduction that these shock absorbers can achieve,” he said.

Matthew was impressed with the performance of the Tünkers rubber shock absorber.



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“The performance of the shock absorber was pretty amazing, and I’d say it definitely reduced the level of vibrations by around 70 percent to 80 per cent. It’s changed things from our point of view, we can now quote a lot more jobs knowing we can use one of these absorbers with a piece of vibratory equipment on a hydraulic all terrain. We’ve now got the proof because

we’ve completed a project with it and Wicks and Parker were happy, so it’s a massive win,” said Matt.

Another fan of the Tünkers range of rubber shock absorbers Paul Wood from Fitzgerald Constructions. Paul is Plant Supervisor and has been with the organization for 25 years.

For more than 30 years ago, Fitzgerald

Constructions Australia have been providing civil engineering and concrete construction services to numerous industry sectors including bridge construction, building construction civil construction and infrastructure, marine construction transport and remedial concrete.

Paul explains a bit more about his role within the organization.

“I’m a plant superintendent and look after all the cranes, piling barges and equipment we run in the business. We operate 40 plus marine vessels, 30 plus crawler cranes, and driving piles anywhere from 457 cm diameter to two and half meter diameters. Our crane fleet includes 20t capacity Frannas through to 600t capacity crawlers. The crawlers are mainly Kobelco and Manitowoc.

“Fitzgerald Constructions operates in a range of industries including the marine, concrete and civil sectors and we building anything from bridges to tunnels and wharfs. Currently, we are building the biggest multi-compartmental silo in the world, Lorimer Street in Port Melbourne. It’s 78 meters high and being constructed of slipform concrete,” said Paul.

Fitzgerald Constructions has a close and long term relationship with Pilequip which dates back many years.

“Pilequip has always been fantastic with service and pricing. We have hired a lot of gear from Pilequip over the years and they will hire gear from me occasionally. We have also purchased a number units from them and their backup and support is second to none. Their mechanics are factory trained, they are highly skilled and knowledgeable. I rate the team at Pilequip very highly,” said Paul.

David Hopkins introduced Paul to the Tünkers range of rubber shock absorbers.

“Dave called about the Tünkers rubber shock absorbers and gave me a week’s free trial, and I really liked them. I think they’re a great innovation, they are simple to use and really effective. I am in the process of matching the right size of shock absorber with our equipment. The shock reduction built into the Tünkers rubber shock absorbers is fantastic. I’m extremely impressed and so were our crane operators,” said Paul. ●