Neutral Citation Number: [2023] EWHC 1142 (TCC)

Case No: HT-2019-000259

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
TECHNOLOGY AND CONSTRUCTION COURT (KBD)

Rolls Building
Fetter Lane, London EC4A 1NL

Date: 12 May 2023

Before :

THE HONOURABLE MR JUSTICE PEPPERALL

- - - - - - - - - - - - - - - - - - - -

Between :

ENERGY WORKS (HULL) LIMITED

Claimant

- and -

(1) MW HIGH TECH PROJECTS UK LIMITED
(2) M+W GROUP GMBH

Defendants

- and -

OUTOTEC (USA) INC.

Third Party

- - - - - - - - - - - - - - - - - - - -

Judgment
(No. 2)

- - - - - - - - - - - - - - - - - - - -

Stephen Dennison KC, Felicity Dynes, Sanjay Patel and **Mathias Cheung**
(instructed by **Fenwick Elliott LLP**) for the **Claimant**
Jonathan Acton Davis KC, William Webb KC, Ebony Alleyne and **Thomas Saunders**
(instructed by **Clyde & Co. LLP**) for the **Defendant**
Adrian Williamson KC and **Paul Bury**
(instructed by **Walker Morris LLP**) for the **Third Party**

Hearing dates: 10, 11, 14, 15, 16, 17, 18, 21, 22, 23, 24, 29 & 30 June, 1, 2, 5, 6, 7 & 8 July, 8, 9 & 10 September 2021, and 5 December 2022

Further submissions: 25 & 30 November and 9 & 16 December 2022 6 & 13 February 2023

Page

THE HONOURABLE MR JUSTICE PEPPERALL:

INTRODUCTION

1. My principal judgment in this case was handed down on 20 December 2022 and can be found at [2022] EWHC 3275 (TCC), (2022) 206 ConLR 40. It ran to some 856 paragraphs and resolved the major issues in this litigation. In this second judgment I deal with the outstanding matters in issue between the main contractor, MW High Tech Projects UK Limited ("M+W"), and the gasifier subcontractor, Outotec (USA) Inc. ("Outotec").

SUMMARY OF MY FINDINGS

2. For the reasons explained below, I make the following further findings in the third-party proceedings:

   2.1 The settlement between the employer, Energy Works (Hull) Limited ("EWH"), and M+W does not preclude M+W from pursuing its contribution claims or from relying on the defence of abatement. [See paragraphs 3-15.]

   2.2 I assess M+W's contribution claim in the total sum of £20,000:

Defect no.	Defect	Award (£)	Paragraphs	
			Principal judgment	This judgment
28	Noise issues	Nil	728-740	
23	Over Fire Air / Under Fire Air slagging issues	Nil	741	
17	Feeding system – screw and bin design	Nil	742-749	19-22
9	Inadequate corrosion protection	Nil	750-755	
32	Blocked bed cones	Nil	756	
7	Use of ladders and specification of ladders	20,000		23-40
35	Baghouse hopper and air slides	Nil		41-44
25	Gasifier refractory lining failure and damage to fuel feed chute	Nil		45
10	Motors	Nil		46-53
3	Furnace inspection equipment	Nil		54-60
34	OFA dampers	Nil		61
33	Blockage of boiler screen hopper and multicyclones	Nil		62-66

37	Hydrated lime dosing	Nil		67-69
14	Urea injection nozzles	Nil		70
		£20,000		

2.3 I dismiss Outotec's claim for variations. [See paragraphs 71-100.]

2.4 M+W's defence of abatement succeeds in the sum of $488,746.65. [See paragraphs 101-113.]

2.5 I have determined the proper construction of the provisions for enhanced interest at clause 41.8 of the subcontract at paragraphs 114-122.

SETTLEMENT

3. On 16 December 2022, EWH, M+W and M+W's parent company (M+W Group GmbH) entered into a settlement agreement by which the M+W companies agreed to make a payment in full and final settlement of EWH's claims. On behalf of Outotec, Adrian Williamson KC and Paul Bury contend that this settlement has "utterly changed the landscape." They submit that the proper legal analysis is that M+W cannot now recover any sums upon its contribution claim and cannot rely upon the defence of abatement unless it can prove that the settlement was reasonable; the settlement included specific sums attributable to Outotec's breaches of contract; and those specific sums are themselves reasonable. They contend that M+W ought to have pleaded an amendment to reframe its case on the basis of the settlement but has failed to do so. Having failed to plead or prove that any ascertainable and reasonable part of the settlement sum was attributable to Outotec's breaches of contract, it is submitted that the contribution claim and the defence of abatement must now fail.

4. Jonathan Acton Davis KC and William Webb KC, who appear for M+W, reject this analysis. They contend that the true effect of the Civil Liability (Contribution) Act 1978 following the settlement of EWH's claims against M+W is as follows:

4.1 First, M+W no longer needs to prove that it was liable to EWH, rather it is sufficient if M+W would have been liable in the event that EWH's case was proven.

4.2 Secondly, once this hurdle is overcome, it is still necessary for M+W to prove that Outotec was liable to EWH for the same damage.

4.3 Thirdly, the amount of the contribution is fixed by a broad assessment as to the sum that is "just and equitable." Such assessment is not affected by the settlement.

5. Further, they contend that settlement has no impact on the issue of abatement which is not a freestanding claim but a defence to the price of goods and services.

6. There is a line of authorities that where a main contractor settles an employer's claim, he can seek to recover a contribution from a subcontractor not by first proving his own liability to the employer but by proving:

6.1 that the employer's claim was not so weak that no reasonable party would take it sufficiently seriously to negotiate any settlement that involved making a payment;

6.2 that the amount paid in settlement was reasonable having regard to the strength of the claim in the sense of being within the range of settlements which reasonable parties in the position of the main contractor might have made having regard to all the circumstances;

6.3 that the subcontractor's breach of duty caused the loss incurred in satisfying the settlement; and

6.4 that - as will generally be the case where a subcontractor is in breach of contract and a claim by the employer is in the reasonable contemplation of the parties - the possibility of a reasonable settlement of such claim was also within the reasonable contemplation of the parties to the subcontract.

See Siemens Building Technologies FE Ltd v. Supershield Ltd [2009] EWHC 927 (TCC), [2009] 2 All E.R. (Comm) 900, Ramsey J, at [80]. Such formulation was not challenged on appeal: [2010] EWCA Civ 7, [2010] 1 Lloyd's Rep. 349. See also General Feeds Inc. Panama v. Slobodna Plovidba Yugoslavia [1999] 1 Lloyd's Rep, 688, Colman J, at page 691; Biggin v. Permanite [1954] 2 K.B. 314, CA; and 125 OBS (Nominees 1) v. Lend Lease Construction (Europe) Ltd [2017] EWHC (TCC), [2017] T.C.L.R. 8, Stuart-Smith J, as he then was.

7. There is a statutory basis for no longer requiring the main contractor to prove its own liability to the employer. Section 1(4) of the Civil Liability (Contribution) Act 1978 provides:

> "A person who has made or agreed to make any payment in bona fide settlement or compromise of any claim made against him in respect of any damage (including a payment into court which has been accepted) shall be entitled to recover contribution in accordance with this section without regard to whether or not he himself is or ever was liable in respect of the damage, provided, however, that he would have been liable assuming that the factual basis of the claim against him could be established."

8. It is, however, important to understand that this line of authorities does not obviate the need for the main contractor to prove the subcontractor's breach of contract: see Fletcher & Stewart Ltd v. Peter Jay & Partners (1976) 17 B.L.R. 38.

9. In the leading case of Biggin, the claimant settled an arbitration arising out of the supply of defective roofing materials. It then sought to recover the settlement sum in an action against the supplier. At first instance, Devlin J, as he then was, found that the settlement sum was irrelevant to the issue of quantum and dismissed the claim holding that the claimant was required to prove its actual loss, being its actual liability to the customer. Somervell LJ, as he then was, disagreed. At page 361 he explained:

> "I think that the judge here was wrong in regarding the settlement as wholly irrelevant. I think, though it is not conclusive, that the fact that it is admittedly an upper limit would lead to the conclusion that, if reasonable, it should be taken as the measure. The result of the judge's conclusion is that [the claimants] must prove their damages strictly to an extent to show that they equal or exceed £43,000; and that if that involves, as it would here, a very complicated and expensive inquiry, still that has to be done. The law, in my opinion, encourages reasonable settlements, particularly where, as here, strict proof would be a very expensive matter."

10. Singleton LJ added, at page 325:

> "If, upon the evidence, the judge is satisfied that the damages would be somewhere around the figure at which the plaintiffs had settled, he would be justified in awarding the settlement figure. I do not consider that it is part of his duty to examine every item in those circumstances."

11. And at page 326:

> "The question is not whether the plaintiffs acted reasonably in settling the claim, but whether the settlement was a reasonable one; and, in considering it, the court is entitled to bear in mind the fact that costs would grow every day the litigation was continued. That is one reason for saying that it is sufficient for the purpose of the plaintiffs if they satisfy the judge that somewhere around the figure of settlement would have been awarded as damages.
>
> This view is supported by Fisher v. Val de Travers 45 L.J. (C.P.) 479, 35 L.T. 366, where the second of the questions left by the judge to the jury had been whether the sum paid as compensation was reasonable, and the jury found that it was. In that case, in the course of the argument, Brett J, asked counsel: 'Supposing Hicks had claimed £1,000, which, as the damages really amounted to £110, we now know would be excessive, and the plaintiffs had paid, could they have recovered that from the defendants?'; and counsel answered: 'No, because the plaintiffs would have to show they paid the proper compensation.' That I believe to be the test."

12. In essence, the Court of Appeal in Biggin recognised that it may be proportionate not to require a main contractor who has settled the employer's claim to provide strict proof of its liability to the employer but only the reasonableness of its settlement. Conversely, in my judgment, once a case has been pleaded and tried on the basis that such proof was required, it is not proportionate to require the matter to be reopened and proved on a different basis because of a post-trial settlement. While not essential to my decision, I venture the view that the rationale for the rule in Biggin does not in any event prevent a main contractor from eschewing the shortcut of seeking to prove the reasonableness of the settlement and instead seeking simply to prove its liability to the employer and then in turn its claim for contribution. To reframe Brett J's question, upon the court concluding that the £1,000 settlement was excessive, why should the plaintiffs in his case not recover the lesser sum of £110 that was the true value of Hicks' claim?

13. M+W does not plead or argue its case on the basis of the settlement. Indeed, it could not have done so since the settlement took place long after trial and only shortly before my first judgment was handed down. I reject Outotec's submission that the claim for contribution must fail because M+W has not pleaded or sought to prove loss caused by its reasonable settlement of specific heads of claim. At trial, it was essential for EWH to prove M+W's liability for breaches of the main contract and the loss that flowed from such breaches; and then for M+W in turn to prove Outotec's liability for breach of the subcontract. The case having been tried on this basis, then - whatever the position might be where there is a pre-trial settlement - it is not appropriate now to reopen matters and require M+W to prove its contribution claim on the basis of the reasonableness of the post-trial settlement.

14. The position in respect of abatement is more straightforward. Abatement has nothing to do with the main proceedings but is a true defence to Outotec's claim for the outstanding price under the subcontract.

15. Even where a contribution claim is not pursued on the basis of a settlement, I accept that it might be capped by the terms of the settlement in the event that the main contractor successfully mitigated its loss by settling the employer's claim at a discount. The burden of pleading and proving that the main contractor's loss was successfully mitigated and therefore the quantum of the avoided loss would, however, be on the subcontractor: Thai Airways International Public Co. Ltd v. KI Holdings Co. Ltd [2015] EWHC 1250 (Comm), [2016] 1 All E.R. (Comm) 675, Leggatt J as he then was, at [83]-[92]. Outotec has not taken up that challenge.

THE MINOR DEFECT CLAIMS

16. By Appendix 4 to the Particulars of Claim, EWH sought damages of around £12 million in respect of thirty-three different defects. In my principal judgment, I dealt with the seven claims (defects 28, 23, 17, 26, 9, 32 and 24) with an individual pleaded value in excess of £500,000. It is, however, necessary briefly to revisit defect 17.

17. Thereafter, and following M+W's concession in its closing submissions in respect of defect 16, it is only now necessary to consider the following nine defect claims:

Defect no.	Defect	Pleaded claim (£)
7	Use of ladders and specification of ladders	391,147.29
35	Baghouse hopper and air slides	190,652.40
25	Gasifier refractory lining failure and damage to fuel feed chute	118,011.73
10	Motors	35,329.65
3	Furnace inspection equipment	27,447.29
34	OFA dampers	23,729.51
33	Blockage of boiler screen hopper and multicyclones	20,145.61
37	Hydrated lime dosing	13,305.24
14	Urea injection nozzles	1,092.13

18. Following the settlement of the main proceedings it now suits M+W for the court to find that EWH's remaining defect claims are made out and then to order that Outotec pay a contribution in respect of such liability or that M+W is entitled to abate its outstanding liability for the price of the subcontract works. Fortunately, however, I have the benefit of the evidence and argument presented at trial when M+W's interests were best served by seeking to defend EWH's claims.

DEFECT 17: THE FUEL-FEED SYSTEM

19. At paragraph 611 of my principal judgment, I said:

> "It is possible to identify agreed costs of £1,423.86 that were clearly referable to defects 17(i)-(ii), and I award that sum. I invite the parties to lodge further written submissions identifying with precision the evidence already before the court as to any further loss that arises solely from the breaches pleaded at defects 17(i)-(v)."

20. Upon seeing my draft judgment, EWH lodged written submissions seeking to justify an award of an additional £307,646:

    20.1 First, EWH invited me to construe its pleaded case more broadly. I had, however, already considered and rejected that submission at paragraph 596. Further, I expressly considered and rejected the submission that EWH's case as to breach was developed by the Further Information provided on 3 April 2020 at paragraphs 594-595. In any event, my principal judgment has now been handed down and any challenge to my approach to these pleading points can only be taken on appeal.

    20.2 Secondly, EWH referred me to the fourth joint statement of the quantum experts. I had of course already considered that evidence and referred to it at paragraph 610 of my principal judgment. EWH helpfully identified a reference to the quad screws in the joint report.

    20.3 Thirdly, I was also referred to paragraphs 164-173 of Luca Carlassara's first statement which, it was contended, explained that the first phase of works carried out by IEIS related only to the metering bins. That assertion is not, however, borne out by the quoted passage which is concerned with works undertaken by Black & Veatch and extended also to the control system, motors, gearboxes and metering screws, and is contradicted by paragraph 178 which does deal with the IEIS works.

    20.4 Fourthly, I was referred to Lee Read's estimates as to likely repair costs at paragraph 204 of his first statement and paragraph 19 of his third statement. This evidence is no more persuasive in respect of defect 17 than it was in respect of defect 23; as to which see paragraph 585 of my principal judgment. In any event, this does not assist with the pleaded breaches.

21. Having correctly submitted at trial that EWH's pleaded claim bore very little relationship to the remedial works and that the quantum was "incomprehensible", M+W's interests are of course now better served by a finding attributing real value to defect 17. With some reticence, it now simply adopts and puts forward EWH's submissions. I reject those submissions and conclude that EWH only succeeded in establishing M+W's liability in the sum of £1,423.86.

22. At paragraphs 742-749 of my principal judgment, I have already dismissed the contribution claim in respect of the claims pleaded at (i) and (ii) of defect 17. Since these were the only claims on which EWH proved some loss, it follows that M+W's contribution claim is dismissed.

DEFECT 7: LADDERS

THE ALLEGATIONS

23. By Appendix 4 to the Particulars of Claim, EWH pleaded that M+W was in breach of paragraph 4.6.4 of Schedule 22D of the EPC contract in that:

    23.1 the use of steel ladders across the site was not restricted to "exceptional circumstances" but was widespread;

    23.2 M+W specified and installed steel ladders without approval from the Project Manager;

    23.3 the use of ladders did not comply with reg. 9 of the Construction, Design and Management Regulations 2015 in that it failed to eliminate, so far as was reasonably practicable, foreseeable risks to health and safety; and

    23.4 the design of the ladders failed to comply with relevant British standards, being BS EN ISO 14122-1: 2016, 14122:2, 14122-3:2016, 14122-4:2016 and/or BS 5395.

24. In fact, the first three allegations fell away since at trial EWH did not seek to pursue a case on the basis that stairs should have been specified and installed at various locations. Rather, EWH limited its case to its complaint that a number of ladders were defective.

25. The pleaded claim at Appendix 4 to the Re-Amended Particulars of Claim pursues damages in respect of a substantial number of ladders:

    25.1 First, EWH claims £90,107.35, being the alleged cost of the remedial works carried out to ten ladders and the baghouse emergency escape ladders and platforms at levels 1-2.

    25.2 Secondly, EWH claims £301,001.08 being the alleged cost of further remedial works to twenty-seven ladders itemised as ladders 1-26 plus ladder VL-M-01.

LIABILITY

26. I reject EWH's reliance on the 2016 editions of the British Standards which were introduced after the date of the contract:

    26.1 Paragraph 2.1 of Schedule 22D to the EPC contract provided that all designs should be carried out "according to the current British Standards." Upon its natural and ordinary meaning that was a reference to the standards current at the date of the contract.

    26.2 Clear words would be required to justify EWH's proposed construction that the contract required compliance with the standards as modified from time to time: see Lewison on the Interpretation of Contracts, 21st Ed., para. 3.73; MPloy Group Ltd v. Denso Manufacturing UK Ltd [2014] EWHC 2992 (Comm), Christopher Butcher QC as he then was.

27. In his first witness statement, Matthew Poole explained that Fichtner carried out an inspection of the ladders in March 2020. In a table at paragraph 338 of his statement, Mr Poole set out the detailed findings and recommended remedial work in respect of thirty-four ladders. His evidence was not challenged. Further, while the parties each called expert evidence in respect of the alleged defects, this did not challenge the findings in the inspection report:

    27.1 Dr Craig Edgar, who gave evidence for EWH, stressed in his report that he had not personally inspected all of the ladders but rather he had carried out a spot check on something like six to ten of the defective ladders referred to by Mr Poole. His findings on doing so were consistent with Mr Poole's analysis. He agreed in cross-examination that the defects included matters of workmanship and design.

    27.2 Simon Richards, who gave evidence for M+W, confirmed that he did not examine any of the ladders "other than a cursory glance at them as [he] was passing by." Rather he relied on the contemporaneous survey reports.

    27.3 Stephen Linwood, who gave evidence for Outotec, again relied upon the contemporaneous inspection report.

28. Dr Edgar identified six different categories of defect:

    28.1 First, a failure to ensure that ladders were properly attached and secured to structures and base plates.

    28.2 Secondly, a failure to modify the swing gates at the top of the ladders so that they were properly hinged and self-closing.

28.3 Thirdly, a failure to paint the top rail of swing gates dayglow orange to ensure that the gates were clearly distinguishable from other handrails.

28.4 Fourthly, a failure to install safety hoops that were of an appropriate shape, height and width for the ladder type and position, with a distance within the hoop of 762 mm.

28.5 Fifthly, a failure to install fibre-grid rung-grip to the existing ladder rungs in order to minimise the risk of slipping when the rungs become wet.

28.6 Sixthly, excessive and unsafe gaps between handrails, arrival platforms and walkway panels, and a failure to use infill meshed steel panels to cover such gaps.

29. By its closing submissions, M+W accepted that proof of any of these six matters would amount to a defect and a breach of the EPC contract. Accordingly, the only issue on liability in the main proceedings is whether EWH has established the presence of one or more of these defects. As to that, I accept the accuracy of Fichtner's findings. Further, it is common ground between the parties' technical experts that the ladders were defective in that they failed to comply with:

29.1 paragraph 4.6.4 of Schedule 22D to the EPC contract; and

29.2 sections 1.6.4 and 2.5.2.8 of the Outotec subcontract

which required compliance with the various British Standards. EWH would therefore have established liability in respect of defect 7 and M+W has likewise established a breach of the subcontract.

QUANTUM

30. The quantum experts have not assessed the remedial costs on a ladder-by-ladder basis. Instead, they have approached the valuation exercise in two ways:

30.1 EWH's quantum expert, Ann Nash, has used the average repair cost of £10,011.93 per ladder calculated from the actual costs of the remedial works already carried out. She said in oral evidence that this was the only way that she could approach matters. Challenged as to whether this was just putting a finger in the air, she accepted that it was not perfect. Further, Mrs Nash could not understand the basis on which EWH had pleaded its case separating ladders into those with a remedial cost of £4,808.35, £7,588.35 and £12,506.10.

30.2 M+W's quantum expert, Mark Gordon, valued defect 7 on the basis of the technical experts' analysis of the number of alleged defects in each ladder and identified a remedial cost per defect.

31. The per-defect approach was proposed by Simon Richards, M+W's technical expert who reviewed the number of defects in respect of each ladder helpfully stripping out matters that would only be a breach of the subsequent 2016 British Standard. Dr Edgar agreed in cross-examination that some of the defects, such as the failure to paint the top rungs of the swing gates, were pretty trivial while others were more significant. While not instructed to consider quantum, Dr Edgar commented on Mr Richards' approach of valuing defect 7 on a per-defect basis. He said that the approach had the advantage of simplicity but that it would not give an accurate assessment of quantum since the remedial cost for defects would vary significantly. He therefore advised that homogenising the cost of each of the different defects would not lead to an accurate assessment.

32. Outotec's quantum expert, Andrew Drennan, rejected both approaches. He reported that without full substantiation of the actual and forecast costs for each ladder, it was not possible to value the claim for defect 7. He rejected any valuation that purported to allocate costs on a pro-rata basis.

33. Both EWH and M+W's approaches relied on extrapolation of the remedial costs already incurred. Neither is perfect but I do not consider that it is appropriate simply to give up because quantification of EWH's undoubted loss is difficult. Dr Edgar is right to criticise Mr Richards' suggested approach as homogenising the remedial costs at the defects level. I agree, however, with M+W's submissions and Mr Gordon's oral evidence that such approach at least has the advantage that it is more granular and sophisticated than homogenising the remedial costs at the ladder level regardless of the number of defects in each ladder.

34. I would therefore have awarded EWH damages calculated on the basis of a pro-rata assessment of the defects which, upon Mr Richards' analysis of the defects, would have led to a total liability of £125,253.14 comprising £44,559.99 in respect of past remedial costs and £80,693.15 in respect of future costs.

THE CONTRIBUTION CLAIM

35. M+W seeks a contribution from Outotec in respect of ladders 1-2, 10-16 and 26 in Appendix 4 in the sum of £102,109.35. Notification is conceded.

36. At Annex A to its closing submissions, EWH helpfully drew together the expert evidence on the issue of defects in respect of the individual ladders. Focusing just on those ladders in respect of which M+W seeks a contribution:

    36.1 The analysis does not support the pleaded claims at items 15 and 26.

    36.2 The analysis does, however, support the claims at items 1-2, 10-14 and 16 of Appendix 4. Accordingly, the contribution claim only needs to be considered in respect of these eight ladders.

37. The contribution is sought in respect of EWH's pleaded claim which ascribed a total value of £76,955.55 to the claims for these eight ladders:

    37.1 Three ladders (1, 2 and 14) are claimed in the sum of £4,808.35 each.

    37.2 The remaining five ladders (10-13 and 16) are claimed in the sum of £12,506.10 each.

38. These ladders represent 29% of the EWH's total pleaded claim for future remedial costs. Since EWH would only have recovered £80,693.15 for all future costs, I consider that the maximum appropriate contribution would be £23,401.01, being 29% of such sum.

39. In its closing submissions, M+W accepts that some of the alleged defects did not fall within the scope of Outotec's supply and that therefore it cannot recover a full contribution. Specifically, it is conceded that painting was not within the scope of Outotec's works. That is a factor in respect of seven of the eight ladders. Dr Edgar confirmed, however, that it was an example of a relatively trivial cost.

40. Doing the best that I can upon the material before me, I therefore conclude that it would be just and equitable to order Outotec to pay a contribution of £20,000 in respect of defect 7.

DEFECT 35: BAGHOUSE HOPPER & AIR SLIDES

41. This defect relates to damage to the baghouse filter bags and cages in compartments 3 and 5 in the baghouse. It was first identified in November 2019 after an extended shutdown caused by termination of the EPC contract. The bags in the affected compartments were sitting in the Air Pollution Control Residues ("APCR") that sit at the bottom of the baghouse. Dr Edgar considered six different causes of this defect:

    41.1 Insufficient ash removal by the slides.

    41.2 Insufficient insulation leading to increased moisture.

    41.3 Workmanship issues with the installation of the cages and bags.

    41.4 Uneven flue-gas distribution in the baghouse filter.

    41.5 Insufficient bag cleaning by the pulsed air.

    41.6 Malfunctioning level detectors.

42. These causes mostly arose from failures in respect of the installation, maintenance or operation of the plant. Such causes were variously the responsibility of M+W, EWH or Black & Veatch. The only cause for which Outotec might be responsible is the level detectors. That said, Dr Edgar considered that the principal reason why the bags in compartments 3 and 5 failed was because the bottoms of these bags were left submerged in APCR and suffered alkali corrosion. I accept that evidence. Indeed, I consider that the fact that this defect only affected the bags that were submerged in APCR is significant.

43. M+W asserts that Outotec was in breach of its obligation under paragraph 3.2.1 of Appendix B of the subcontract in that the boiler operating campaign life was less than 7,500 hours of operation "within normal operating parameters" and without requiring a shutdown for manual cleaning. For the reasons explained at paragraphs 567-575 of my principal judgment, such breach is not established. The case is, however, also put on the basis of Outotec's alleged failure to carry out a competent design and supply sound materials. In my judgment, that allegation is made out.

44. The contribution claim is, however, dismissed:

    44.1 First, I have already dismissed the contribution claim under defect 35 for want of notification at paragraph 726 of my principal judgment.

    44.2 Secondly, and in any event, Outotec's quantum expert, Andrew Drennan, is right to complain that there is no evidence upon which the court could properly assess quantum:

        a) There is an invoice for 1,530 filter bags. While the quantum experts have assumed that 50% of these were used as replacements for defect 35 there is no factual or technical evidence to support this assumption.

        b) I accept the submissions made by both M+W and Outotec as to the claim for the cleaning and other costs.

DEFECT 25: GASIFIER REFRACTORY LINING FAILURE

45. It is common ground that a section of the refractory lining failed in September 2019. EWH alleges that such failure was caused by M+W's poor installation and workmanship. Assuming for present purposes that such claim is made out, I would in any event dismiss the contribution claim:

    45.1 The technical experts (Chris Higman, David Wakefield and Stephen Linwood) agree that there is no design issue.

    45.2 There is no evidence of any non-conformity being identified either in Outotec's quality assurance process or upon M+W's inspection on receipt at Hull.

    45.3 York Linings inspected the failure and concluded that this was an installation issue.

    45.4 Dr Wakefield, M+W's own expert, concluded that misalignment in the course of installation was a credible explanation for failure. Mr Higman and Mr Linwood considered installation to be the primary cause of failure.

    45.5 M+W's primary case, that the failure was caused by thermal stress when the gasifier operated outside its permitted temperature range, would not in any event assist it in a contribution claim.

    45.6 While, relying on Fabricom's complaint of loose tolerances, M+W has raised the prospect of some error in fabrication, it has not proved such case. On the balance of probabilities, I consider that the most likely explanation for this failure was an installation error.

    45.7 In any event, I have already dismissed the contribution claim at paragraph 726 of my principal judgment.

DEFECT 10: MOTORS

EWH'S CLAIM AGAINST M+W

46. Paragraph 2.14 of Schedule 22C to the EPC contract provided:

> "Motors shall be of the totally enclosed air-cooled type and have a degree of protection of not less than IP54 except in dirty areas subject to wash down such as the lime preparation area, or IP55 unless they are situated outdoors, exposed to weather, or situated in areas covered by water-spray fire fighting equipment, when they shall be weatherproof and have a degree of protection of not less than IP56."

47. There is substantial common ground in respect of defect 10:

    47.1 M+W accepts that in breach of contract a number of motors were installed that did not meet such standards. For the most part, these motors were installed outside and did not meet IP56.

    47.2 The technical experts (Dr Edgar, Mr Wakefield and Mr Linwood) agree that it is appropriate to replace all non-compliant critical motors and one in four non-compliant non-critical motors.

    47.3 M+W accepts that EWH's claim of £317.42 per motor is reasonable.

48. The principal issues are therefore to determine how many non-compliant motors were installed and which of these motors were critical.

49. I reject M+W's argument that EWH failed to mitigate its losses by failing to require M+W's subcontractors to replace non-compliant motors. EWH's contract was with M+W and it is not explained why it was unreasonable to seek to hold M+W to its contract or alternatively how doing so has caused any additional loss.

THE CONTRIBUTION CLAIM

50. Again, it is of course only now necessary to consider in further detail the claims in respect of motors for which a contribution is claimed.

51. Paragraph 2.12.4(P) of Appendix A to the Outotec subcontract specification was at least as demanding, and in some respects more demanding, than the EPC contract. Thus, I accept that insofar as M+W was liable to EWH for motors supplied by Outotec, Outotec was itself in breach of the subcontract.

52. M+W claims a contribution of £3,491.62, comprising:

    52.1 £2,539.36 in respect of eight critical motors; and

    52.2 £952.26 in respect of spares for the non-critical retractable soot-blower motors.

53. M+W provided a useful table together with its closing submissions that pulled together Fichtner's evidence as to defects, Andrew Ashenhurst's evidence as to criticality, and Wendy Crispin's evidence as to whether a particular motor was supplied by Outotec. Subject to notification, I consider that the contribution claim is made out in the sum now claimed of £3,491.62. It fails, however, for want of notification:

    53.1 By Further Information provided on 3 April 2020 and its Re-Amended Reply and Defence to the Third Party's Counterclaim, M+W relies upon its letter of 19 December 2018 as notification of this defect.

    53.2 Such letter notified a claim under clause 37.8 of the subcontract in respect of a bucket elevator motor that was installed outside but did not meet IP66. Such letter is not notice of the contribution claims now pursued.

DEFECT 3: FURNACE INSPECTION EQUIPMENT

EWH'S CLAIM AGAINST M+W

54. Although other provisions were relied upon at trial, this defect was pleaded as a breach of paragraph 6.2.8(11) of Schedule 22B to the EPC contract which required M+W to provide "furnace inspection equipment, including doors for inspection in the upper part of the gasifier/furnace chamber and between the convection passes." EWH contends that M+W failed to provide adequate furnace inspection equipment in the upper part of the chamber and specifically that it did not provide doors allowing access for inspection of the gasifier.

55. It is common ground that M+W was in breach of contract in failing to provide access doors as required by paragraph 6.2.8(11). While EWH did not specifically plead a failure to provide appropriate rope access nozzles, I accept that such allegation is encompassed by the overarching complaint of inadequate furnace inspection equipment. Mr Linwood sought to suggest that the one-inch rope nozzles provided were adequate. I prefer, however, the evidence of Dr Edgar and Mr

Richards that the nozzles were inadequate for safe rope access and that M+W was accordingly in further breach of the EPC contract.

56. The experts have agreed the quantum of defect 3 in the sum of £27,481.46. I would, however, have limited the award in favour of EWH to the slightly lower pleaded sum of £27,447.29.

57. Again, I reject M+W's argument that EWH failed to mitigate its losses by not requiring M+W's subcontractor to remedy these defects.

THE CONTRIBUTION CLAIM

58. Outotec concedes that access doors should have been provided. In view of my finding in respect of the rope nozzles, I consider that Outotec was again in breach of the subcontract.

59. Subject to notification, I consider that it would be just and equitable to order a contribution in the full sum of £27,447.29.

60. By its Further Information provided on 3 April 2020, M+W pleaded that notice of this defect (albeit it was in error described as defect 2) was given by Mr Meakin's letter dated 19 November 2018. Outotec challenges that such letter was received and there is simply no evidence to the contrary. Indeed, the only witness to refer to the letter is Luca Carlassara of Fichtner and he does not appear to have known of the letter contemporaneously. The contribution claim therefore fails for want of notification.

DEFECT 34: OFA DAMPERS

61. This defect can be taken shortly:

    61.1 EWH alleges that the OFA dampers failed properly to control the supply of air into the gasifier.

    61.2 Both M+W and Outotec have conceded that the original dampers were defective and Outotec has supplied replacement dampers.

    61.3 The initial claim was properly objected to by Outotec as including the costs of materials already provided by it at no cost. Ms Nash and Mr Gordon have now agreed a revised valuation of £7,934.10 for the associated labour costs. But for the settlement, I would have awarded this sum to EWH.

    61.4 Subject to notification, I would also have ordered Outotec to pay a contribution in that sum. This defect has not, however, been notified and should have been listed together with the other defects numbered 23 and above in my analysis at paragraphs 723.3, 724 and 725 of my principal judgment. The contribution claim fails for want of notification.

DEFECT 33: BLOCKAGES OF BOILER SCREEN HOPPER & MULTICYCLONES

62. EWH alleges that, in breach of paragraph 6.4.7 of Schedule 22B to the EPC contract and the overarching design duty at clause 3.4, M+W failed adequately to design the boiler screen hopper and multicyclones which form part of the boiler ash extraction system. In consequence, boiler ash was not removed and these parts became blocked. I reject EWH's alternative argument that it can

establish liability on the basis that defect 33 is a symptom of the wider issue of slagging in view of my conclusions at paragraphs 533-587 in my principal judgment.

63. M+W's own expert, Simon Richards, reported that M+W had breached its design obligations because it failed to provide the boiler screen hopper with the insulation required to prevent condensation and the rodding points that would allow the easy removal of blockages. Further, he concluded that the hopper design failed to anticipate that fly ash would or could solidify.

64. In addition, all three technical experts (Dr Edgar, Mr Richards and Mr Linwood) agreed that the design of the multiclones had resulted in blockages and that the primary issue was the gas-flow rate which was too low and allowed ash to settle on or adhere to the surface of the multiclones and thereby cause blockages.

65. In my judgment, EWH has established M+W's liability for defect 33. While the experts agreed quantum in a slightly larger sum, I would, but for the settlement of the main proceedings, have awarded EWH damages in the pleaded sum of £20,145.61.

66. For these reasons, I consider that Outotec was in breach of its own obligations under paragraph 1.3.4.8 of Schedule 1 to the subcontract. Subject to notification, I would therefore have ordered Outotec to pay a contribution in that sum. I have, however, already dismissed the contribution claim for want of notification at paragraph 726 of my principal judgment.

DEFECT 37: HYDRATED LIME DOSING

67. EWH alleges that the design of the hydrated lime dosing system was defective in that the dosing could not be adequately controlled. The problem appears to have arisen from blockages in the balance line between the volumetric feeders and the scrubber. M+W admits that the design was defective in that there was no means to isolate the feeder hoppers and control the flow of hydrated lime. As between EWH and M+W, quantum was agreed in the sum of £11,700. Such sum represented the cost of installing new knife gate valves to isolate the hoppers.

68. In fact, the suggested valve has never been installed and EWH has instead undertaken works to modify the balance line pipework by introducing a swept bend. Dr Edgar reports that these modifications appear to have been successful and that accordingly there is no need to install an isolation valve or carry out any further works.

69. I dismiss the claim for contribution:

    69.1 The sum of £11,700 was the claimed cost of installing a knife-gate valve. Such modification has not been made and is not necessary. Notwithstanding the best efforts of Ms Nash and Mr Gordon to place some value on the more limited remedial works undertaken, Mr Drennan is right that there is simply no evidence on which the court can properly assess the cost of those works. Accordingly, regardless of whether Outotec's liability can be established, there is no evidence to quantify the loss.

    69.2 In any event, I have already dismissed the contribution claim for want of notification at paragraph 726 of my principal judgment.

DEFECT 14: UREA INJECTION NOZZLES

70. This defect, which is said to be worth only a little over £1,000, can be taken shortly:

70.1 By paragraph 6.4.8 of Schedule 22B to the EPC contract, M+W was required to provide injection nozzles "at appropriate different levels to allow injection points to be changed as necessary during operation for optimisation of the system." In turn, Outotec assumed a like obligation pursuant to paragraph 1.3.4.19 of Schedule 1 to the subcontract.

70.2 It was common ground that urea should not be sprayed on boiler tubes. As Mr Richards explained in cross-examination:

> "… it's a very well-known phenomenon that urea sprayed on boiler tubes can corrode and erode them within … a space of two weeks."

70.3 Mr Richards insisted that this was not a question of defective design, rather it was a matter of optimising the position of the urea injection nozzles by selecting appropriate nozzle ports during commissioning. I prefer, however, the evidence of Dr Edgar and Mr Linwood that four of the urea injection points as originally designed and supplied failed to comply with both the EPC contract and the subcontract.

70.4 Ms Nash and Mr Gordon agreed this claim in a sum a little over that pleaded. I would therefore have found for EWH while limiting the award to the pleaded sum of £1,092.13.

70.5 Subject to notification, and notwithstanding the lack of quantum evidence in respect of this very modest claim, I would have ordered a contribution in the same sum.

70.6 By its Re-Amended Reply and Defence to the Third Party's Counterclaim, M+W pleaded that notice of this defect was given on 24 November 2017. Such letter was concerned with the lack of welding of pre-fabricated tee spools and not the positioning of the injection nozzles. The contribution claim therefore fails for want of notification.

VARIATIONS

VARIATION 3

71. Outotec seeks the cost of investigating a revised ash discharge system. This was not a variation as defined by clause 16.1 of the subcontract, namely:

> "any change from that stated in the Subcontract to the Subcontract Plant, to the Subcontract Works, to the Site, to the method of working, or to the sequence or timing of the work."

72. Rather this is a claim for work done with a view to a potential variation. Clause 16.3 provided:

> "The Contract Manager may at any time instruct the Subcontractor to prepare or to assist him in the preparation of a potential Variation and the Subcontractor shall comply with such instruction and give to the Contract Manager his recommendations for the form and scope together with an estimate of the Cost and impact on the Approved Programme of the Variation at such time and in such detail as the Contract Manager shall require."

73. Claims for variations requested by the Contract Manager are valued pursuant to the machinery under clause 18: see clause 16.2. Payment can also be claimed for potential variations but such claims are subject to a different contractual regime. Clause 16.7 provided:

> "The Subcontractor shall be entitled to an addition to the Subcontract Price determined in accordance with and subject to Clause 19 (Claims) in respect of the Cost of preparing a potential Variation in accordance with Sub-clause 16.3, of commenting upon a proposed Variation in accordance with Sub-clause 16.4 or of responding to a Variation Order in

> accordance with Sub-clause 16.5 and 16.6, whether or not any such potential or proposed Variation is ordered or amended or such Variation Order is confirmed or withdrawn."

74. Clause 19 makes prompt notification of Outotec's intention to make such a claim a condition precedent of M+W's liability:

    74.1 Clause 19.1 provides:

    > "If the Subcontractor intends to claim any additional payment which does not arise out of a Variation, he shall notify the Contract Manager of such intention within ten days of becoming aware of the event which gives rise to the claim, and shall establish and maintain records relevant to the claim, together with such additional records as the Contract Manager may direct. All such records shall be open to inspection by the Contract Manager."

    74.2 Clause 19.3A provides:

    > "Service of notice in accordance with the Subcontract Conditions is a condition precedent to the entitlement of the Subcontractor to any compensation for any matter to which clause 19.1 relates."

75. Notice pursuant to clause 19.1 is simply of an intention to claim additional payment. Outotec was then required, by clause 19.2, to submit its detailed claim for payment "as soon as possible thereafter."

76. Outotec relies on an instruction in respect of the potential variation at meetings in or around July and August 2016. Wendy Crispin explains the work that was done between mid-July and 29 September 2016. She does not assert that any notice of intention to claim payment was given but says that Outotec sent a Project Change Order to M+W on 2 October 2016 asserting a claim for $10,023.30 in respect of the engineering, administrative and project management time that had already been spent on the proposed variation.

77. M+W deny contemporaneous receipt of the Project Change Order. Curiously, it withdrew paragraph 101 of Matthew Crawley's first statement but not paragraph 77 of his second statement. His unchallenged evidence was therefore that the Project Change Order was not in fact uploaded to the shared portal until 24 April 2017. This evidence is supported by two matters:

    77.1 First, the screenshot of the portal produced by Mr Crawley.

    77.2 Secondly, I note that while dated 2 October 2016 (using the American notation 10/02/2016), the Project Change Order was also initialled "MM" with the date added "4-19-17", which I take to be 19 April 2017. Nicklas Morén explains that all estimates for contractual variations were signed off by Mike Murphy and that his initials can be seen on, among others, Project Change Order 3. Once Mr Murphy had approved and initialled the estimate, Mr Morén would then submit the request to M+W.

78. I therefore find on the balance of probabilities that the Project Change Order was sent to M+W in April 2017 and that there was no contemporaneous notification of an intention to claim for this proposed variation. Even if it had been sent in October 2016, I would not in any event consider that document to be the early notice of an intention to make a claim required by clause 19.1. Rather it was an ex post facto claim for payment of the kind envisaged by clause 19.2. In my judgment, the purpose of the contractual scheme is that warned of an intention to claim for speculative work done

on a potential variation, M+W should be given the opportunity to ask Outotec to desist from carrying out such work.

79. Accordingly, I dismiss the claim for variation 3.

VARIATION 29

80. Outotec seeks the cost of assisting with the Access, Lifting and Maintenance Study. By a Variation Order dated 6 March 2018, Outotec asserted that M+W requested its assistance with the study by emails dated 9, 14 & 21 February and 1 March 2018. It then relied on an email chain between Outotec, M+W and FBW Engineering Services Limited:

    80.1 By an email sent on 9 February 2018, Mike Dawber of FBW introduced himself to Gerhard Luehmann and Niklas Morén of Outotec as a fellow subcontractor engaged to complete the Access, Lifting and Maintenance Study. He sought to arrange a meeting on site to discuss issues. In advance, he sought sight of relevant information in respect of Outotec's design.

    80.2 By an email sent on 14 February 2018, Mr Dawber referred to a meeting that had taken place that morning on site. He said that it was apparent that he would require assistance from Outotec's engineering team and he sought Mr Morén's availability for a meeting. He also asked Outotec to compile and provide various documents about its works.

    80.3 By further emails sent on 21 February and 1 March 2018, Mr Dawber chased for a response and a copy of the latest draft of the Access, Lifting and Maintenance schedule.

81. Mr Morén sent the so-called Variation Order to FBW on 6 March. His covering email added:

> "We can help, but it will require much more than the Contract stipulate (sic), and what we have agreed to. Please find a Variation Order in this regard – please sign and send back if you would like Outotec's help."

82. Since this exchange had been copied to M+W, Robert Lettice picked this up. He and Tim Lakeman correctly characterised the order as a request for the issue of a variation. It was plainly so on the face of Mr Morén's email.

83. Clause 16.1 of the subcontract is clear:

> "The Subcontract shall make no Variation except as ordered by the Contract Manager."

84. There is no plea or evidence that M+W directly instructed the variation now claimed. Further, there is no evidence that FBW purported to instruct Outotec to carry out further work in response to Mr Morén's email of 6 March. Even if it had, there is no plea or evidence that FBW was authorised to instruct a variation or that M+W is estopped by some representation from denying FBW's apparent or ostensible authority.

85. In the alternative, Outotec claims payment for the additional work undertaken pursuant to clause 19. That machinery is, however, expressly limited to claims for additional payments not arising out of a variation. Further, as discussed above, any claim under clause 19 is subject to a condition precedent that Outotec must first give prompt notice of its intention to claim payment. While the email and

attachment of 6 March 2018 certainly gave notice that Outotec would expect to be paid for any work done in supporting FBW's work on the Access, Lifting and Maintenance study in the event that its Variation Order was signed and returned, it wasn't.

86. Accordingly, the claim for variation 29 is dismissed.

VARIATION 30

87. Outotec seeks the cost of assisting M+W with the assessment under the Dangerous Substances and Explosive Atmosphere Regulations 2002 ("DSEAR").

88. This claim is also dismissed:

88.1 As with variation 29, Outotec relies on an instruction given by FBW rather than M+W.

88.2 Again, Outotec responded by raising a Variation Order.

88.3 While this order, dated 7 March 2018, was sent more directly to M+W, there is no suggestion that it was signed and returned by the Contract Manager or indeed by FBW purporting to act on his behalf.

88.4 There is no plea or evidence that M+W directly instructed the variation now claimed. Further, there is no evidence that FBW purported to instruct Outotec to carry out further work in response to Mr Morén's email of 7 March. Even if it had, there is no plea or evidence that FBW was authorised to instruct a variation or that M+W is estopped by some representation from denying FBW's apparent or ostensible authority.

88.5 It is not therefore necessary to consider M+W's further argument that there was no variation because Outotec was in any event required to provide an ATEX/DSEAR assessment in collaboration with M+W.

88.6 Again, the alternative claim under clause 19 does not take Outotec any further forward. Either this was additional work over and above Outotec's existing contractual obligations (in which case it involved a variation and could not be claimed under clause 19) or it is within the scope of the subcontract (in which case there would be no entitlement to additional payment).

VARIATION 31

89. Outotec seeks the cost of assisting M+W with additional meetings and in locating documentation.

90. As a general proposition, I accept M+W's argument that assisting a main contractor with documentation in respect of subcontract works is an inherent part of a subcontractor's responsibilities. That said, the unchallenged evidence of Carol Kemp makes clear that this usual process became far more onerous and time-consuming for the subcontractor because of M+W's disorganisation and lack of familiarity with the agreed procedures for document control. The problem, however, with this claim is clause 21.6 of the subcontract which provides:

> "The Contract Manager shall have the right at any time on reasonable notice to examine any Documentation which has been or is being prepared by the Subcontractor or his Sub-subcontractors for the purposes of the Subcontract except any Documentation of a class or description which Schedule 2 or any Special Condition states shall not be shown to the Contractor or the Contract Manager."

91. Given the breadth of this provision, I consider that the claim for this variation must fail:

    91.1 Unless the requests for assistance were made by or on behalf of the Contract Manager then there can be no right to a variation: clause 16.1.

    91.2 Outotec has failed to prove that such requests were outwith the contractual right provided by clause 21.6.

    91.3 Equally the claim under clause 19 must fail. Either this was a request for additional work (in which case this was a variation and cannot be claimed under clause 19) or it was within Outotec's existing contractual obligations (in which case there is no basis for the claim).

VARIATIONS 32 & 34

92. Outotec seeks the cost of additional site advisory work between April 2018 and 7 February 2019. Its pleaded case relies on the following matters:

    92.1 The agreement between Mr Morén and Mr Purcell in September 2017 that an additional senior engineer would be provided for a week.

    92.2 An email from Vincent Jones dated 13 April 2018 that M+W required "additional support" from Outotec and asked for its technical advisor to be on site on Saturdays and Sundays.

    92.3 A further email from Mr Jones dated 2 November 2018 seeking a suitably qualified OEP person on site from 9 November.

    92.4 Provision of a boiler inspector in May 2018.

93. Variation 32 is claimed in respect of mid-week overtime while variation 34 is claimed in respect of weekend working.

94. Paragraph 1.1 of the subcontract specification provides:

> "The Subcontract Agreement comprises the design, manufacture, factory testing, painting, and advice on the following: installation and erection, commissioning, putting into normal operation, testing for performance, certification, reliability on completion, instruction of the operator's personnel in the operation and maintenance of the Works.
>
> The Subcontractor's responsibilities under the Subcontract are limited to the Subcontract Works and advisory services during construction and commissioning."

95. Paragraph 1.2 identifies the scope of works. Such provision includes:

> "The Sub-Contract Works shall include the design, manufacture, supply, commissioning, advice and testing advice of a fluidised bed gasification Facility. The Subcontractor shall include for all Works associated with the Sub-Contract Agreement and elsewhere in the specifications …
>
> The Scope of Works shall include, but not be limited to: …
>
> • On-site advisor during installation and integration
>
> • On-site advisor during testing, commissioning and certification …
>
> The Subcontractor shall provide the complete fluidised bed energy system, including but not limited to: …

> • Advisory and attendances"

96. Further, paragraph 1.3 identifies the scope of services and includes:

> "The Subcontractor shall provide all services required under this Sub-Contract Agreement to provide an operational gasification plant. The scope of services shall include but not be limited to …
>
> • Project management, implementation and construction advisement …
>
> The scope of work shall include supply and service as listed below but not be limited to …
>
> • commissioning and performance testing advisement
>
> • on-site advisory services (for installation and commissioning"

97. Outotec was therefore contractually required to provide all necessary on- and off-site advice and support. There was no contractual limit on the number of hours that were to be provided or upon the working hours that were required.

98. I accept M+W's submission that without some agreed baseline, it is difficult to establish that any resource required by the main contractor was extra-contractual. It is not enough simply to point to requests for additional support or overtime or weekend working. Such requests might be properly characterised as extra contractual if Outotec could first prove the appropriate contractual baseline, but equally they might be seen simply as a request that it was now necessary for Outotec to provide further resource to meet its existing contractual commitment.

99. Outotec responds that M+W has failed to call any evidence on these variations. The burden is, however, on Outotec to establish a separate contractual entitlement to these variations on the basis that M+W instructed additional work. Mr Morén simply asserts in his evidence that the claim was for advisory personnel and commissioning resources "over and above those that [Outotec] had included within the subcontract." Whatever Outotec's own internal calculations as to the likely level of support upon which it priced this contract, that does not of itself prove that the advice and support required by M+W was outwith the contract.

100. In my judgment, Outotec has not discharged that burden and these variation claims therefore fail. Again, the separate claim under clause 19 is hopeless since this was either additional work (in which case it was a variation and cannot be claimed under clause 19) or work that was in any event required under the subcontract (in which case there can be no claim for additional payment).

ABATEMENT

101. I have already addressed the law of abatement at paragraphs 807-822 of my principal judgment. For the reasons then explained, M+W is entitled to abate the outstanding purchase price due under the subcontract by reference to the defects in Outotec's works. At paragraph 822 of my judgment, I invited the parties to address me further on how the defence of abatement would operate in practice in this case.

THE ARGUMENT

102. Mr Acton Davis KC and Mr Webb KC submit that there was no market for the Outotec plant; there being relatively few projects of this nature in the world at any given time and the plant being manufactured specifically for this particular project to Outotec's own proprietary design. In the absence of any market, they submit that the defective plant would inevitably be resolved by remedial work such that the reduction in value of the plant can only sensibly be assessed by reference to the remedial costs. Such approach is, they submit, supported by Multiplex Constructions (UK) Ltd v. Cleveland Bridge UK Ltd [2006] EWHC 1341 (TCC), (2006) 107 ConLR 1, in which Jackson J, as he then was, confirmed that the cost of cure can, in an appropriate case, be used in isolation to determine the diminution in value.

103. Mr Williamson KC and Mr Bury submit that M+W has failed properly to plead its abatement defence and that it is now too late to claim that there is no market value such that its right to abate should be assessed on the basis of the cost of cure. Relying on Jackson J's further observations in Multiplex at [653], they submit that M+W would have to plead expressly the diminution in value caused by the various breaches of the subcontract. By way of example, they point to the fact that the award that would have been made in respect of defect 28 had it been notified includes the costs of identifying defects. A similar claim was, they submit, rejected by Jackson J at [659] as not being a claim for abatement.

104. Mr Acton Davis KC and Mr Webb KC respond that it is too late now for Outotec to complain that abatement is not adequately pleaded.

ANALYSIS

105. It is right that Outotec only took two contractual points at paragraph 19A of its Defence and Counterclaim when it argued that any right to abate had been assigned or was in any event excluded by clause 45.2 of the subcontract. I rejected both arguments in my principal judgment. Following my earlier judgment, the issue is not whether M+W is entitled to rely on the defence of abatement but how such defence operates in this case. I specifically sought help with that issue since the case appeared to be argued on the assumption that the remedial costs for each defect should quantify the extent of the abatement without any further analysis of the true diminution in value of this plant. That is the point with which I am now concerned. It is not really a pleading point but a question of proof upon which M+W bears the burden. Outotec argued the point pithily right from paragraph 71 of its opening submissions at trial:

> "In any event, if a right to abate did remain, M+W would need to show that, by reason of Outotec's breaches of contract, the value of their work was less than the sum claimed. This M+W have not sought to do."

106. In Multiplex, Jackson J said, at [652]:

> "Although there is not a complete harmony of approach to be discerned from this line of cases, I derive seven legal principles from the authorities cited:
>
> (i) In a contract for the provision of labour and materials, where performance has been defective, the employer is entitled at common law to maintain a defence of abatement.
>
> (ii) The measure of abatement is the amount by which the product of the contractor's endeavours has been diminished in value as a result of that defective performance.
>
> (iii) The method of assessing diminution in value will depend upon the facts and circumstances of each case.

(iv) In some cases, diminution in value may be determined by comparing the current market value of that which has been constructed with the market value which it ought to have had. In other cases, diminution in value may be determined by reference to the cost of remedial works. In the latter situation, however, the cost of remedial works does not become the measure of abatement. It is merely a factor which may be used either in isolation or in conjunction with other factors for determining diminution in value.

(v) The measure of abatement can never exceed the sum which would otherwise be due to the contractor as payment …

(vii) Claims for delay, disruption or damage caused to anything other than that which the contractor has constructed cannot feature in a defence of abatement."

107. I accept Outotec's submissions that the true measure of abatement is the diminution in value of the subcontract plant. Equally, M+W is right to contend that such diminution in value can sometimes be ascertained by considering the cost of remedial works.

108. I accept that it *might* be difficult to identify a market for the subcontract plant in this case for the reasons advanced by M+W. While there might be few similar projects, the plant is not, however, unique and indeed there was evidence before the court of a number of other broadly contemporaneous projects just in the UK. It is for M+W to prove its defence of abatement and I cannot, without evidence on the point, determine on the balance of probabilities that the task is impossible and that, as a matter of generality, the difference in value of the defective subcontract plant is necessarily greater than the claimed remedial costs.

109. The defence of abatement therefore fails, with one exception, by reason of the lack of evidence before the court as to the diminution in value of the subcontract plant. The exception is defect 28. In my judgment, the diminution in value of the plant by reason of Outotec's breaches of its obligations to ensure compliance with:

109.1 the contractual limits for onsite noise by failing properly to mitigate the noise of the airside blowers, ID fan and stack outlet; and

109.2 the Environmental Permit by failing properly to mitigate the noise of the ID fan and the Air Pollution Control Residue conveyor,

can only sensibly be assessed by considering the remedial costs.

110. Not only were these bespoke items that had been manufactured to M+W's order and installed at the Hull plant but, without modification, they could not be operated within the limits of the contract or permit. Unless these and other noise pollution issues were resolved there was a real risk that the plant might lose its permit and be required to cease operations. While what was deemed too noisy for safe operation in Hull might conceivably be acceptable in a more remote location, I am on the balance of probabilities satisfied that the defence of abatement in respect of defect 28 should be assessed on the basis of the remedial costs.

111. Further, I reject Outotec's analogy with the general costs of Sandberg in identifying defects in Multiplex. Costs properly incurred in investigating the noise issue and designing an appropriate remedial plan are properly included in the costs of cure. The defence of abatement therefore succeeds in the sum of £377,492.16.

EXCHANGE RATES

112. A short further point arises because of the fact that the milestones are claimed in US dollars while the abatement claims are in pounds sterling. In my judgment, the proper analysis is that where Outotec's claim for payment of a particular milestone has been abated then the sum to be awarded in respect of that milestone is reduced at the point such milestone fell due for payment. Accordingly, it is necessary to convert the abatement into US dollars at the time of the abatement in order to identify the outstanding US dollar liability in respect of that and other milestones.

113. Since the abatement in respect of the defect 28 breaches of the subcontract arises in respect of the plant covered by milestones 7.1-7.6, I conclude that the value of the abatement should be converted to US dollars at the exchange rate applicable on 11 May 2017, namely £1:US$1.29472. The value of the abatement is therefore $488,746.65.

INTEREST

114. Outotec seeks enhanced interest upon the outstanding milestones and variations pursuant to clause 41.8 of the subcontract. The sub-clause provides:

> "If the Contractor does not make payment in full by the Final Date for Payment of the amount of an instalment:
>
> (a) in accordance with any notice issued under Sub-clause 41.7; or
>
> (b) certified and notified in accordance with Sub-clause 41.4; or
>
> (c) where applicable in accordance with Sub-clause 41.6;
>
> or if either party does not make any payment due under any other provision of the Subcontract by the Final Date for Payment the amount not paid shall bear interest compounded daily from the Final Date for Payment until the amount not paid is received by the other party at an annual rate which is two per cent above the Agreed Rate for the first month of delay. The annual rate of interest shall be increased by a further two percent at the end of each further month of delay, up to the end of the third month. If the delay exceeds three months the annual rate of interest shall thereafter be ten per cent above the Agreed Rate."

115. It is common ground that there was no relevant pay-less notice under clause 41.7 and no certification or notification of a liability to make a payment under clause 41.4. Outotec therefore relies on the catch-all provision that M+W did not make payment "under any other provision of the subcontract by the Final Date for Payment."

116. These interest provisions are therefore dependent upon there being a Final Date for Payment. Such term is defined at clause 41.5:

> "Any sum certified and notified as due in accordance with Sub-clause 41.4 shall be due for payment fourteen days (or fifty-six days in the case of the final request for payment) after the date of receipt by the Contract Manager of the Subcontractor's request for payment in accordance with Sub-clause 41.3. The Contractor shall pay the amount so notified by a date (the Final Date for Payment) which shall be thirty-five days (or seventy-seven days in the case of the final request for payment) after the date of receipt by the Contract Manager of the Subcontractor's request for payment in accordance with Sub-clause 41.3."

117. Accordingly, there is a Final Date for Payment in any case where there has been certification and notification of a liability to make a payment under clause 41.4. Where there has first been certification and notification of a liability under clause 41.4 and then a pay-less notice under clause 41.7 then there is again a Final Date for Payment as defined by clause 41.5. There is, however, some tension between the definition of Final Date for Payment and the references to clause 41.6 and any other residual liability for payment in clause 41.8.

118. Clause 41.6 provides:

> "If for any reason the Contractor, or the Contract Manager on his behalf, fails to notify the sum due in accordance with Sub-clause 41.4 by the payment due date determined in accordance with Sub-clause 41.5 the sum notified by the Subcontractor in his request for payment in accordance with Sub-clause 41.3 shall be due for payment by the Final Date for Payment."

119. This is problematic since both the payment due date and the Final Date for Payment are defined in clause 41.5 by reference to a case where there has been notification of a liability under clause 41.4. The true meaning is, however, clear:

    119.1 In a case where the Contract Manager certifies and notifies a liability to pay an instalment then additional interest bites if M+W fails to make payment in full of the notified liability (or in accordance with a subsequent pay-less notice) within 35 days (or 77 days in the case of the final request for payment) of Outotec's request for payment: clauses 41.4, 41.5, 41.7 & 41.8.

    119.2 In a case where the Contract Manager fails to notify a liability to pay an instalment within 14 days (or 56 days in the case of the final request for payment) then additional interest bites if M+W fails to make the requested payment within 35 days (or 77 days) of Outotec's request for payment: clauses 41.5, 41.6 & 41.8.

120. It is more difficult to make sense of the application of clause 41.8 to other residual liabilities for payment such as for variations given that the Final Date for Payment is defined by clauses 1.1 and 41.5 in terms that makes the term only applicable to claims for instalments under clause 41. While the issue is academic since the variation claims have been dismissed, I venture the tentative view that, upon a proper construction of the subcontract, enhanced interest cannot be claimed upon variations. Such construction does not deprive the residual category of all meaning since it would be apt to cover cases caught by clause 41.11, which provides:

> "If the amount of a payment which is:
>
> (a) notified in accordance with Sub-clause 41.4 (and no notice is given by the Contractor under Sub-clause 41.7 in respect of such payment); or
>
> (b) stated in a notice given by the Contractor under Sub-clause 41.7;
>
> is referred to an adjudicator appointed in accordance with Clause 47 (Adjudication) and if the decision of the adjudicator as to the amount which is to be paid by the Contractor is that more shall be paid than the amount stated as in (a) or (b) as applicable, the additional amount shall be paid not later than:
>
> (i) seven days from the date of the adjudicator's decision; or
>
> (ii) the Final Date for Payment;
>
> whichever is the later."

121. Accordingly, enhanced interest is payable under clause 41.8 upon:

121.1 unpaid sums that were certified and notified by M+W pursuant to clause 41.4;

121.2 unpaid requests for payment of instalments where M+W failed to notify the sum due by the due date for payment such that the requested sum became payable pursuant to clause 41.6;

121.3 unpaid sums in accordance with a pay-less notice notified no later than one day before the Final Date for Payment pursuant to clause 41.7; and

121.4 unpaid additional sums payable under an adjudication decision pursuant to clause 41.11.

122. Outotec submits that, even where enhanced interest is not payable under clause 41.8, the court should award interest pursuant to s.35A of the Senior Courts Act 1981 at the same level as the parties have agreed in the subcontract. Such submission has only to be stated to be rejected. In such eventuality, enhanced interest will not be payable under the contract precisely because the case is outwith the narrow circumstances in which the parties have agreed the payment of such interest.