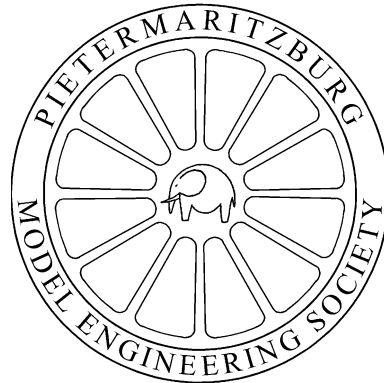


# *Maritzburg Matters*

February



2019

PIETERMARITZBURG MODEL  
ENGINEERING SOCIETY



<b>President-</b>	Roy Clemitson	Tel	033 3453810
		Em	cynthia.clemitson@gmail.com
<b>Chairman-</b>	Martin Hampton	Tel	033 3963227
			083 3883149
		Em	martinjchampton@gmail.com
<b>V-Chairman-</b>	Andries Keyser	Tel	062 2061906
		Em	andrieskeyser@yahoo.com
<b>Treasurer-</b>	Dave Tanner	Tel	083 2343000
		Em	dawie.tanner@gmail.com
<b>Secretary-</b>	Alan Hill	Tel	0723962592
		Em	hillac@ukzn.ac.za
<b>Committee-</b>	Lucas Steyn	Tel	072 7167577
		Em	oomstoom@gmail.com
<b>Committee-</b>	Les Cloete	Tel	083 5393064
		Em	lescloete012@gmail.com

**Postal Address-** P. O. Box 100430  
Scottsville  
3209

**Tracksite and Clubhouse-** 78 Rudling Rd  
Pelham  
Pietermaritzburg  
3201  
(No postal delivery)

**Club Meetings-** **General Meeting:** Third Monday of each month at 19H45 at Halley Park. Visitors welcome  
**Running Day:** First Sunday of each month  
**Committee meetings:** Preceding the General Meeting, at 18h30  
**Work Day:** Saturday following the General Meeting

**Web Page-** [www.pmes.co.za](http://www.pmes.co.za)

**Facebook-**  Find us on Facebook (Pietermaritzburg Model Engineering Society)

**GPS co-ordinates-** 29.5833° S, 30.4167° E

No responsibility is taken by the Society for any subject matter in this Newsletter other than official Society notices.

It is with great sadness that we report the passing of Roy Clemitson on Friday afternoon 1<sup>st</sup> February. Roy has been intimately involved with the PMES for around forty years, he has been on the committee for most of this time serving as an ordinary committee member, vice-chairman, chairman, and currently as treasurer and President. He has been involved in everything that the Club has done over all of those years including being a part of the decision to find a home base, identifying an appropriate piece of land, and then putting all his efforts in to ensure that it would be a success. He was very proud of what the Club had achieved over the years, as well as supporting new initiatives that would see even further improvements.



We will all miss Roy's input which was largely behind the scenes, mowing the lawns, braaing the wors for workdays, making tea, doing the purchasing, keeping the finances on the straight and narrow, nagging many of us to get things done, arranging the birthday bookings and finding drivers. The list simply goes on!

Unsurprisingly he was elected as an Honorary Life Member many years ago in recognition of his sustained, high levels of input to the Club's affairs. Needless to say, he never slackened off, carrying out his numerous tasks right up to an hour or so of his passing.

We can only remember him for the friend and gentleman that he was, who had everyone's interests at heart, and most specifically those of the PMES, we are going to miss him sorely.

Our condolences go to his family and most particularly to his wife Cynthia.



## Brian Morley

It is with great sadness that we report the passing of Brian Morley, a member of some fifty years standing! He was also an Honorary Life Member and past chairman, secretary and treasurer, who was very involved in the Club's affairs in the early years of getting the Club established at Halley Park.

He was instrumental in doing the fencing and initial landscaping, and then was the first to begin lawn-mowing and establishing the gardens and trees that has become the park that we all enjoy so much now!

Our condolences go to his son Trevor and daughter Anne.

## Editorial Matters

Martin Hampton

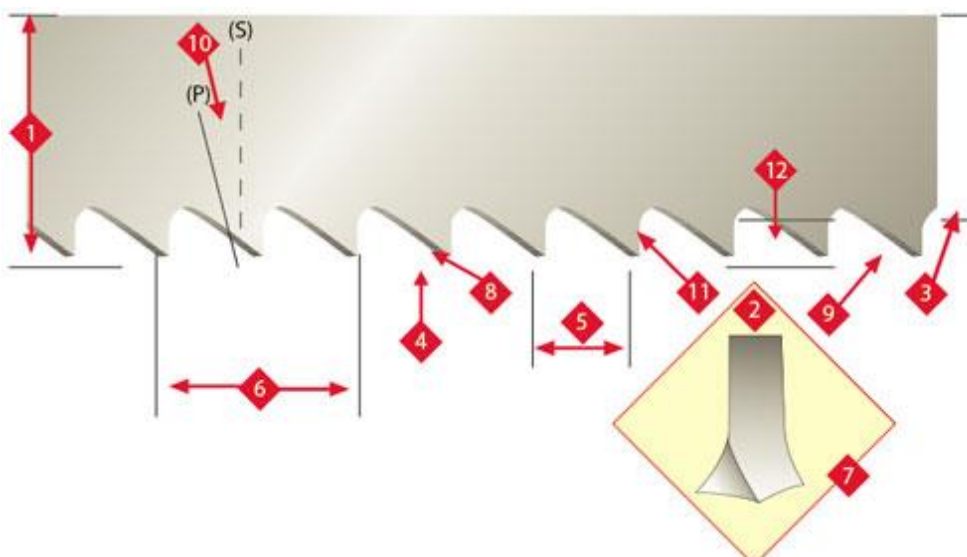
Our running day this month was able to showcase the amazing progress that has been made on the station paving, it is going very well and will be a picture on completion. Dave and Ray seem to have boundless energy and enthusiasm!

A number of other projects are still going forward, we await the results with anticipation. The new lathe is on the go as is the new boiler for Brutus.

Unfortunately we have had to make contingency plans for the continuation of all of Roy's duties and responsibilities, we are very lucky in having had Dave Tanner volunteer to do the treasurer's job as well as Alan Hill who has volunteered to fulfil the purchasing functions. We are still looking for another mower driver!!

## 10 Essential Tips for Choosing a Band Saw Blade

Gene Ramsdell



*It's not difficult to choose the right blade for your application; all you need to do is carefully consider and understand tooth shape, blade width, and teeth per inch.*

The typical saw blade has myriad geometric features. 1. Width—Distance between the tip of the cutting edge and the back of the blade 2. Thickness—Measurement taken on the body (gauge) 3. Blade body—Distance from the back of the blade to the bottom of the gullet 4. Tooth—Cutting portion of the blade 5. Tooth pitch—Distance from one tooth tip to the next 6. TPI—Number of teeth per inch. 7. Tooth set—Bending of the teeth, right or left, to allow blade clearance through the cut (or kerf) 8. Tooth face—Surface of the tooth where the chip is formed 9. Tooth back—Angled surface of the tooth opposite the tooth face 10. Tooth rake angle—Positive (P) or straight (S), the angle of the tooth face measured from a line perpendicular to the back of the blade 11. Gullet—Curved area between two teeth 12. Gullet depth—The distance from the tooth tip to the bottom of the gullet

The band saw is a useful tool for metalworking due to its versatility and precision, and one can be found in almost every shop. Its usefulness, however, depends on the blade. If you choose the wrong blade, teeth can dull prematurely, damage your material, or break.

It's not difficult to choose the right blade for your application; all you need to do is carefully consider and understand tooth shape, blade width, and teeth per inch.

### 1. Scrutinize Your Performance, Durability, and Cost Needs

Choosing the correct blade to satisfy a range of cutting requirements and applications is critical in a fab shop.

Performance, durability, and cost are all important factors in deciding which band saw blade is right for all of your various applications. Getting the lowest cost per cut, while maintaining acceptable levels of surface finish, is the optimal solution for ensuring continued productivity and profitability. Thinking about these factors is the first step in selecting blades that optimize metal cutting production and profit.

The demands and cutting needs in a fabrication shop require a variety of band saws to cut solid materials and heavy-walled tubing, structural shapes, bundles, and hard materials such as tool steels.

Since no single blade can satisfy all those requirements, you need to decide whether to purchase a dedicated band saw blade for each type of cut needed, change the band saw blade after each application, or choose a band saw blade that works for multiple cutting applications in your fabrication shop. The last option is the most common choice.

### 2. Use the Blade Properly

Choosing the correct blade is only the first step in the decision-making process. Using the blade appropriately for each type of cutting you do is important to prolonging the operational life of the blade. Understanding how the blade will stand up against the cutting of various metal materials is the next step in ensuring better productivity.

### 3. Understand Blade Impact

When blades cut a large, continuous area of solid material, the stresses on the teeth after initial impact tend to be consistent in terms of intensity and direction. The teeth proceed all the way through the cut, maintaining unending contact with the metal. Since no additional impact shocks occur after initial contact, there is no excessive stress on the teeth as they cut through the material. The blade's longevity and ongoing performance in this type of application are based on the blade's wear resistance, which is largely dependent on its hardness and tooth geometry, or rake angle—the angle of the cutting face relative to the work.

For cutting structural steels or bundles, the band saw blade teeth are subjected to multiple forces from different directions. For example, when cutting a piece of tube steel, the blade is required to cut through two walls, thereby causing a destructive action where the tooth is being released in a forward motion by both the speed of the blade and a downward feed pressure. Similar shocks occur when cutting other shapes such as angles, channels, and I-beams.

In the case of bundles, solids, or shapes, the number of strikes per pass increases substantially. These repeated impacts, and the stresses that are generated by the cutting of heavy-duty metal, can cause the teeth to crack.

The No. 1 reason band saw blades fail in fabrication shops is the repetitive shocks or impacts on the blade, not excessive use.

It is impossible for one blade to work well for every purpose. What you need to determine is what band saw blade will be durable enough to withstand these forces while quickly providing a smooth cut without the need for secondary operations such as filing and grinding.

### 4. Determine What Materials You Are Cutting

To determine the band saw blade that best suits your shop's cutting requirements, you must examine the materials being cut. Most blades are bimetal, which means they are composed of two separate metals joined together.

Bimetallic blades consist of layers of different metals. These blades can withstand the punishment of cutting shapes and bundles, yet possess the hardness for

continuous use with solids and heavy-walled tubing and the occasional cutting of high-alloy steels.

Bimetal band saw blade teeth, which are made of high-speed steel, are bonded by various methods to the high-strength carbon steel base. Such construction makes for blades with a better combination of cutting speed and durability than shown by nonbimetal blades in certain applications.

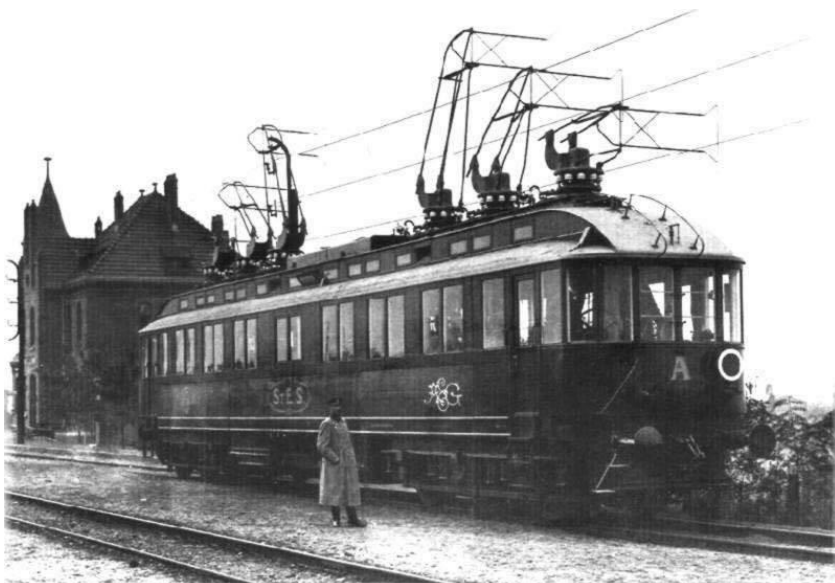
A recent advancement in bimetal band saw blade production replaced electron beam welding with a diffusion bonding process that has resulted in blades that are more resistant to tooth strippage and also able to withstand operating temperatures up to 1,100 degrees F. These blades now can cut materials with 40/45 HRC.

Some bimetals have coatings such as titanium nitride, often used on components to improve surface properties, making them more suitable for custom applications in which neither conventional bimetal nor carbide-tipped blades work well. Heat treatments are also applied to bimetals, providing the right combination of rigidity and strength.

For cutting large volumes of high-nickel-alloy steel, you should use a carbide-tipped blade or tungsten carbide that is 78-80 HRC.

Cutting these hard materials requires more shear break for the material to form the chip, creating a considerable amount of heat at the face of the tooth. Carbide is recommended over high-speed steel because it offers more resistance to heat. Therefore, carbide-tipped blades hold their edges longer than bimetal blades for cutting of such materials as INCONEL®, MONEL®, Hastelloy®, and titanium.

### **Three-phase AC railway electrification**



This was used in Italy, Switzerland and the United States in the early twentieth century. Italy was the major user, from 1901 until 1976, although lines through two tunnels also used the system; the Simplon Tunnel between Switzerland and Italy from 1906 to 1930 (but not connected to the Italian

system), and the Cascade Tunnel of the Great Northern Railway in the United States from 1909 to 1939. The first standard gauge line was in Switzerland, from Burgdorf to Thun (40 km or 25 mi), from 1899 to 1933

## On Historical Lines

Face book page

The drivers of the Grand Junction were a reckless lot. When the GJR opened through on the Liverpool & Manchester the number of accidents due to speeding and not keeping a proper look out spiked massively. One GJR driver named John Rigby left his footplate, climbed over the tender and onto the roof of a first class coach to converse with a collier who was sitting there, asking him if he had any tobacco. The collier did not, so Rigby returned to his engine. Obviously desperate for a smoke, he got off his engine again, and walked along the carriage roofs to find another outside passenger who was smoking a pipe. Rigby asked him for some tobacco, but, with his back to the direction of travel, failed to see an upcoming bridge and was instantly killed.

According to the Coroner, Rigby had been intoxicated at the time and a verdict of accidental death was recorded. It later transpired that neither the GJR or L&M had rules to prevent train crew or other employees from either alighting from or attempting to board a moving train or vehicle, or indeed, walking over the roofs of carriages or over the tops of waggons.

In fact Henry Booth was opposed to such a ruling as it would interfere with the running of the railway. Smoking tobacco, being drunk on the job, not keeping a proper look-out were sackable offences, however.

## Club Notices

- The next **General Meeting** will be a **Video Evening** in the Clubhouse at Halley Park on Monday 18<sup>th</sup> February at 19h45.
- **Colin Healey** will be hosting an **Open Day** on Saturday 9<sup>th</sup> March from 09h00 to 12h00. Please contact him for further details, [colinsteamroller@gmail.com](mailto:colinsteamroller@gmail.com)